THE CHEMIST AND DRUGGIST

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EXPLANATORY.

AT last we may congratulate our readers on the repeal of the Paper Duty. Last year the obstructives successfully resisted its removal. They derived powerful assistance from the paper-makers, who, as a class, were naturally disposed to keep their trade in a few hands. To confine the manufacture of paper to an oligarchy was one of the principal effects of the Excise duty—an effect which was felt to be a public grievance. Soon, however, matters assumed a different aspect. Although the Excise remained, much to the astonishment of the mill-owners, the Customs' differential duty was repealed. Hence a greatly increased competition between the home and foreign manufacturers. Hence, also, the fact which appears to have created some surprise, viz.—that the existing paper-makers, hitherto the strenuous opposers, have been metamorphosed into supporters of the repeal. The truth is, that the paper trade was going right away out of Great Britain. We believe ourselves to be within the mark when we state that the late alterations have resulted in the reduction of full 25 per cent. in the British branch of that business. It was mentioned in Parliament, during the late debate, that one Irish firm which had sent paper to the amount of 18,000*l*. a-year to London, did not now send a single ream. This evil, it is to be hoped, will now be remedied. England is, without doubt, the cheapest market in the world for the manufacture of paper, and—the trade once free from the shackles of the Excise,—will soon distance all competitors.

Although we have deemed this subject of sufficient importance to pharmacists to merit a few remarks, our heading "Explanatory" has still to be explained. The readers of this Journal will have noticed that a portion of the last issue of the *Chemist and Druggist* was printed on a paper different to that of the former numbers of the present volume. For this the paper duty was responsible. The paper used in this Journal is Belgian: our wise law-makers forced us in self-defence to forsake the home, and contract with the foreign maker. Previous to commencing its use, we contracted for and duly received the quantity estimated to supply our wants for six months. Thanks, however, to our supporters, at the end of two months we found our stock nearly exhausted, and, as before stated, were obliged to print a portion of the last impression on a paper equally good, but different in colour. This is what we desired to explain, and would add that any of our subscribers who may wish to receive (for the purpose of binding) a copy of the last number on the usual paper, can now do so gratuitously by applying to the Publisher for a fresh copy.

QUANTITATIVE ANALYSIS.

BY DR. HENRY M. NOAD, F.R.S.

ANALYSIS OF WATERS.*

6. *Determination of Sulphuric Acid.*—An imperial pint of the water is acidified with hydrochloric acid, concentrated to one-half, and excess of *chloride of barium* added. The whole of the sulphuric acid present in the water as alkaline or earthy sulphate is precipitated as sulphate of baryta, every 100 parts of which, after being well washed, dried, and ignited, correspond to 34·37 parts of sulphuric acid.

7. *Determination of Chlorine.*—One pint of the water is acidified with pure nitric acid and concentrated to a quarter of a pint, *nitrate of silver* is then added, with brisk stirring, as long as any precipitate is formed. Conical flasks, which can be closed with the thumb, are very convenient for chlorine determinations, as the liquor, after the addition of the silver salt, can in them be briskly agitated, an operation which greatly favours the subsidence of the precipitate; the flask should be allowed to remain at rest in a warm place for several hours, the clear liquor may then be decanted, or drawn off by a small syphon, without disturbing the precipitate, which is washed until the washings are no longer rendered turbid by dilute hydrochloric acid; the precipitate is then transferred to a small porcelain capsule (fig. 2), previously weighed; it is first dried on the water-bath, and finally heated over the spirit-lamp or gas-flame, until the edges of the salt begin to exhibit signs of fusion, the crucible is then allowed to cool, and weighed. The increase of weight is due to chloride of silver, 100 parts of which contain 24·73 parts of chlorine.

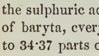
Fig. 2.

8. *Determination of the total amount of Carbonic Acid.*—This can only be done with accuracy when the operator can have access to the source of the water. He goes to the well or spring, provided with four or five pint bottles, into each of which there has been poured one ounce of strong solution of *chloride of calcium*, and one ounce of pure *ammonia*, the bottles are then completely filled with the water, drawn up and poured in with as little agitation as possible; if carbonic acid be present a milkiness is produced, and a precipitate gradually collects, which is thrown on a weighed filter, dried at 212° and weighed. The amount of carbonic acid in this precipitate is determined by the method of Will and Fresenius;† two or three determinations being made. From the amount of carbonic acid thus found, that combined with the alkaline earths is deducted, the remainder is free carbonic acid, unless any *alkaline* carbonates exist in the water, which point is ascertained thus:—

9. *Determination of Alkaline Carbonates.*—Two imperial pints of the water are boiled for some time to precipitate the *earthy* carbonates, which are then filtered off; the filtrate is divided either by weighing or measuring into two exactly equal parts; in one part the amount of chlorine is determined with great accuracy with nitrate of silver (7). The other part is slightly acidified with hydrochloric acid, and then evaporated to perfect dryness, and the residue heated to low redness; when cold it is redissolved in boiling distilled water, and the amount of chlorine ascertained by precipitating with nitrate of silver; should a difference exist between the two determinations, the excess in the latter case represents the amount of chlorine corresponding equivalent for equivalent to the alkali present in the form of carbonate.

10. *Determination of Nitric Acid.*—This is attended with considerable difficulties; various methods have been proposed, that of Pelouze, as modified by Fresenius, being perhaps the best. A large quantity of the water is evaporated with an excess of pure carbonate of soda, the precipitate which forms is filtered and washed, and the filtrate evaporated to dryness, and the residue well mixed and weighed. A long-necked tubulated retort is selected, into the body of which is put about 1·6 gramme‡ of fine pianoforte wire, accurately weighed, and then 30 or 40 cubic centimetres§ of fuming hydrochloric acid added; through the tubulure of the retort a constant stream of hydrogen gas, washed by transmission through caustic potash, is passed, the tube conveying it reaching only about two centimetres into the retort; the neck of the

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* Continued from page 108.

† See Vol. I. p. 390.

‡ 1 gramme = 15·43235 grains.

§ 1 cubic inch = 16·386176 cubic cent.

retort is connected with a U-shaped tube containing some water. The body of the retort is placed on a water-bath, and heated gently until the iron is dissolved, it is then allowed to cool, the current of hydrogen being continued without intermission. A portion of the weighed residue from the water is now put into a small tube and dropped into the retort, the beak of which being again connected with the U-shaped tube, the retort is again heated, first on the water-bath, and then to boiling over a lamp, until the dark colour due to the absorption of nitric oxide gas has disappeared; it is then allowed to cool, still under a continuous stream of hydrogen, copiously diluted with water, and the iron still present as proto salt determined by permanganate of potash, according to the directions given, p. 78: every 168 parts of iron converted by nitric acid from *proto* to *sesquioxide* correspond to 54 of nitric acid. This method is doubtless somewhat troublesome, and requires careful and experienced manipulation; it is, however, *certain* if carefully performed, and, in our judgment, it is the best that has been proposed. For the methods of detecting minute quantities of *ammonia* and *nitric* acid in *rain*-water, the reader is referred to a valuable memoir, read before the British Association for the Advancement of Science, for 1854, by Messrs. Lawes and Gilbert, and to a paper by Dr. E. Pugh.*

11. *Determination of Hydrosulphuric Acid* (*Sulphuretted Hydrogen*).—Bottles similar in size to those employed for carbonic acid have each introduced into them small quantities of a solution of *arsenious acid* in hydrochlorine acid, they are filled at the well, or spring, with water slowly, and without agitation, hereupon tersulphide of arsenic is precipitated, which is collected upon a filter of known weight, washed, dried at 212°, and weighed, every 100 parts correspond with 39 grains of sulphur, and with 41·5 grains = 110 cubic inches of hydrosulphuric acid gas.

12. *Search for and determination of Iodine.*—A quantity of the water, varying from one gallon to six, according to the amount of saline matter it contains, is concentrated by slow evaporation, filtered, and again concentrated to about an ounce; this is mixed with a recently prepared solution of starch, and a drop or two of nitric acid added, the presence of iodine is evinced by the liquid assuming a dark blue colour. Iodine being thus detected, the filtrate from the precipitate produced by evaporating ten or twelve gallons of the water down to two or three pints, is evaporated to dryness with carbonate of soda, the residue is digested repeatedly with alcohol, the alcoholic extract evaporated to dryness, and the residue gently ignited in a platinum crucible to destroy the organic matter; it is then dissolved in water and filtered, the clear liquid is neutralised with dilute hydrochloric acid, and then precipitated by a solution of *protochloride of palladium;* the *protoidide of palladium,* after standing at rest for twelve hours, is collected on a filter, washed with warm water, dried at 212°, and weighed: every 100 parts indicate 70·34 parts of iodine.

13. *Bromine.*—This element, which is found abundantly in some natural waters, those of Kreutznach and Cheltenham for example, is detected by adding to the concentrated water, filtered from the deposited salts, a little chlorine water as long as the yellow colour increases in depth, the bromine thus liberated is taken up by ether, to which it communicates a hyacinth red colour. When *chlorine, iodine,* and *bromine* exist together in a mineral water, they may be determined by the following method devised by Field:—The solution containing the three salts is divided into three equal parts, which are placed in stoppered bottles; a slight excess of nitrate of silver is added to each portion, which is then violently agitated to promote the separation of the precipitate. The precipitates are collected upon separate filters and well washed. No. 1 is dried and weighed in order to obtain the total weight of the chloride, bromide, and iodide of silver; No. 2 is digested in solution of bromide of potassium, dried and weighed as a mixture of bromide and iodide of silver; No. 3 is digested in solution of iodide of potassium, dried and weighed as iodide of silver. The calculation is,—for the chloride of silver—as the difference between the equivalents of bromide of silver and chloride of silver (44·5) is to the equivalent of chloride of silver (143·6), so is the difference in weight after digesting in bromide of potassium to the quantity of chloride of silver originally present. For the bromide of silver the calculation is—as the difference of the equivalents of bromide and iodide of silver (47·1) is to the equivalent of bromide of silver (188·1), so is the excess in weight of the precipitate after digesting in iodide of potassium to the weight of the bromide of silver originally present: and by reversing the figures in the previous calculation of the chlorine and

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* *Quarterly Journal of Chemical Society.*—Vol XII. p. 35.

iodine, we can arrive at the quantity of bromide of silver after deducting the quantity of iodide found in the subsequent experiments.*

14. *Determination of the hardness of Spring Water.*—This is effected by the method suggested by Dr. Clark, by means of a standard solution of curd soap in spirits of wine. As we propose to make this ingenious process the subject of a special paper, we defer any description of the details for the present, promising to return to the subject as soon as possible after the experiments we have now in progress are completed.

(*To be continued*).

PHOTOGRAPHIC CHEMICALS.—IV.

ACETIC ACID.—Symbol, $C_4 H_3 O_3 + H O$; atomic weight, 60. When wine, beer, or similar spirituous liquors, in which vinous fermentation has ceased, are exposed to the air at a temperature above 60°, a new fermentation takes place, during which oxygen is absorbed, and the alcohol graually passes into acetic acid. It is also obtained during the distillation of wood in close vessels. Acetic acid, from this source, is called in commerce pyroligneous acid, or wood vinegar. In each case large quantities of water are present, and the acid is contaminated with various organic compounds, which colour it and give it an empyreumatic flavour, more or less pleasant. Glacial acetic acid is obtained from common vinegar, by neutralising it with carbonate of soda. The acetate of soda formed is purified by several crystallizations, and dried by heat in an iron basin, care being taken that fusion does not take place. It is then pulverized, and put into a capacious tubulated retort with two equivalents of pure sulphuric acid. At a temperature of 125° Fahr. acetic acid and water are liberated, and the heat is carefully raised until the contents of the retort are in a state of gentle fusion. This first product is rectified over a little dry acetate of soda, and then placed in ice until it congeals. The weaker acid is drawn away from the crystals, which may be regarded as pure hydrated acid, with one equivalent of water. This is the strongest form in which the acid is known, for acetic acid, like many others, has never been isolated. It is termed glacial from its property of congealing at 45°, and is pretty constant in its strength. Most of the so-called glacial acetic acid, sold as such, does not solidify above 35° or 40°, and some samples have a small portion of sulphurous acid added, in order to raise the congealing point. To test its strength accurately we are obliged to have recourse to analysis, its specific gravity being no guide, as the following table will show :—

Atoms of Water.	Atoms of Acid.	Sp. Gr.	
1	1	1·0639	
2	1	1·0706	
4	1	1·0713	
7	1	1·0634	
10	1	1·0543	*Thomson.*

From this it will be seen that the liquid acid is at its greatest density when united with four atoms of water; while the density of the glacial acid, containing only one atom of water, is the same as that containing seven atoms. The Acid. Acet. Dil. of the P.L. should be of such a strength that one fluid ounce neutralizes 57 grains of crystallized carbonate of soda. The Acid. Acet. Fortior., or Beaufoy's, should take 390 grains to the fluid ounce, and the true glacial 1036. Glacial acetic acid is to be preferred for all photographic preparations, its chance of purity being greater and its bulk being smaller; but in cases where it cannot be procured, either of the first two may be used, *if pure*, taking care to multiply the quantity by 20 in the case of the Acid. Acet. Dil., and by 3 in that of the Acid. Acet. Fortior.

Its purity should always be tested, as sulphurous acid is sometimes added, as stated above, to give a weaker acid the property of crystallizing at a high temperature, and thus to give it the appearance of strength. The writer has also found hydrochloric acid in one sample quite sufficient to prevent its use in photography. The presence of either of these acids may be detected by dissolving a small crystal of nitrate of silver in a few drops of distilled water, and adding to it a portion of the suspected acid. If the mixture on exposure to light becomes cloudy, we may be sure either of these two acids or both are present. If it turns brown or yellow, some organic impurity, such as aldehyde or tarry matter is the impurity. If nitric acid be suspected, its presence may be detected by the acid decolorising a dilute solution of sulphate of indigo. It should also be tested with chloride of barium for sulphuric acid.

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* The reader is referred for the details of this method to Mr. Field's paper in the *Quarterly Journal of the Chemical Society*, vol. x. p. 234.

The use of acetic acid in photography is to check the energetic action of the developer, both in the glass and paper processes, and to prevent it from acting on the shadows of the picture before the lights and half-tones are fully brought out. It is used for making aceto-nitrate of silver in the Calotype process, and for slightly acidifying the nitrate of silver bath in negative collodion process. Its action in modifying the energy of developer is very marked. If a picture be developed with a solution of pyrogallic acid alone it will be fogged all over, through its lights and shadows being almost equally developed, but as soon as even a small portion of acetic acid is added an improvement is manifest. It should be borne in mind that heat acts as an intensifier of the action of the developer, and cold lessens it. It will be obvious, therefore, that the quantity of acetic acid may be advantageously increased in summer and diminished in winter. Mr. J. E. Woods, the Secretary to the North Atlantic Telegraph Surveying Expedition, assured the writer that when taking collodion negatives amongst the mountains in Greenland, with the thermometer at — 17°, *i.e.* 17 below zero, he could only succeed by using a pyrogallic developer, made with equal proportions of water and rectified spirit, and no acetic acid.

If a bath of ordinary commercial nitrate of silver is made and a picture taken with it, the image will be found to be feeble and bluish from the excess of nitric acid. The addition of carbonate of soda until slight alkalinity is produced, gives a redder picture, quicker in formation, and fogged unequally. A few drops of acetic acid instantly restores the clearness of the picture, and at the same time produces a marked improvement in vigour and beauty of tone. The converse of these remarks is true in the case of positives on glass, in the production of which nitric acid should be used both for the nitrate of silver bath and the developer. Other acids, such as the malic, tartaric, and citric acids, have been proposed and used by some operators. The only one worth attention is citric acid, which, being very strong, is sometimes used with advantage during the great heat of summer. In this case a rather longer exposure should be given.

The acetates will be described under their respective bases. This remark will also apply to the other salts.

ALBUMEN.—Albumen is a principle of not very constant composition, found both in the animal and vegetable kingdoms. It is used in photography in the form of white of egg, that being the purest kind of albumen readily obtainable. It is also found in blood, serum, and other animal substances, but always in a less available state. Its atomic number and symbolic formula are too complicated and uncertain to be of any use to the photographer. It belongs, in composition, to the nitrogenous class of animal substances, and contains small quantities of sulphur and phosphorus. Its most remarkable property is that of becoming insoluble on the application of heat, strong mineral acids, and many metallic salts. Organic acids appear to hinder its coagulation; acetic acid, for instance, seems to enter into combination with it, forming a compound soluble in warm water.

Albumen, as it exists in white of egg, gives a slight alkaline reaction, but this appears due to a small quantity of soluble saline matter combined with it, for if white of egg be dried *in vacuo*, powdered, and digested in pure water, the soluble salts, and a portion of the albumen are dissolved out, while the rest of the albumen remains in an insoluble form. Albumen, in its purest form, exhibits a slightly acid reaction; in fact, in its behaviour with protoxide of silver, and other metallic oxides, it appears to play the part of a weak acid, and to give rise to a definite albuminate of the metal.

The properties of coagulation into a transparent horny structureless mass, and of uniting with protoxide of silver, give it a great value in photography. The albuminate of silver is at first white, but on exposure to light becomes brick-red, from conversion into albuminate of sub-oxide of silver. In the albumenised paper printing process we have a mixture of chloride, nitrate, and albuminate of silver, which experiment has proved to be a compound most fitted to give a vigorous, but, at the same time, soft and artistic proof. No doubt the partial translucency of the albumen compound has something to do with this, and we may look on an albumenised print as bearing the same relation to a plain print that a marble statue does to the plaster cast. Albumen unites with most other metallic oxides, forming, except in the case of the alkalies, insoluble salts. Alkaline chlorides are therefore used in albumenising paper in preference to others. The reactions of albumen on the metallic salts are but little understood, and afford a new and interesting field of observation to the ambitious chemical student.

Its horny and impermeable nature, although of little consequence in the paper process, prevents its use for negatives, as already explained. Its action in the Fothergill and Taupenot processes is still under investigation.

By long keeping albumen loses its alkaline reaction, and becomes more limpid than at first. In this state it is often used by photographers for albumenising paper, it being much more easy to "work" in this state than when fresh. This should never be done, as not only is the albumen decomposed, and its structureless nature destroyed through the formation of striæ, but acids of the phosphorus and sulphur series are formed, which help to bring about the fading of the print. The process for albumenising paper will be fully explained under the head of "Paper." The symbolic formula for albumen is a curiosity in its way, being, according to Gerhardt, $H\,O$, $Na\,O$, $C_{144}\,H_{110}\,N_{18}\,S_2\,O_{42}\cdot 2\,Aq$; but, as Miller justly observes, "such formulæ must be only regarded as approximations."

TOUCHING LINT.

Liebig in one of his delightful letters on Chemistry affirms, that the quantity of soap consumed by a nation would be no inaccurate measure whereby to estimate its wealth and civilization. From the consumption of lint we may, with the same certainty, deduce important conclusions respecting the magnitude and severity of a nation's battles. In a letter which appears in another part of this journal, the effect of the American conflict on the trade in lint is touched upon, and some interesting details respecting the various kinds of lint now in the market are given. As the war fever is raging at the present time, and as the demand for lint daily increases, I take the opportunity for saying a few words about this important product.

Lint was formerly prepared from old linen rags by a process which I shall presently describe. The machine-made lint now generally used invariably contains a portion of cotton; and the variety known as cotton-lint—the term is an etymological contradiction—is formed exclusively of this fibre. Flax, which consists of woody fibre, is procured from the inner bark of the stalk of *Linum usitatissimum* by the process of steeping and stripping off the bark. Under the microscope the fibres are readily distinguished from cotton, being round and attenuated to a point at each end. Cotton is composed of the hairs surrounding the seeds of various species of *Gossypium.* These hairs when dry exhibit under the microscope a peculiar twisted appearance. The quality of cotton depends on the length, strength, and firmness of the tissue, or, as it is called, the *staple.* For the preparation of lint, long-stapled cotton at about 10*d.* the pound is required.

Flax lint is more cooling to a wound than that made from cotton, as it conducts heat more readily. For the same reason a linen shirt is cooler than a calico one. Flax lint has other points of superiority; it is much softer in fibre than the cotton fabric, and its absorbing power is greater. For many purposes, however, cotton-lint may be profitably substituted for the more costly product. Although it is not liked by the surgical profession, most pharmacists use it in unimportant cases. For wrapping round dental instruments and similar purposes, it is nowise inferior to the best flax lint.

Lint made from linen rags is now seldom seen, though many eminent practitioners prefer it to that made by steam-worked machinery. Six years ago the scraped-linen lint was in general use, and a sad outcry was raised against the patent fabric which had then been but recently introduced. The wholesale lint manufacturer of that day looked to the Jews for a supply of linen rags applicable to his purposes. For these rags he generally paid an exorbitant price. To prepare them for the operative lint-maker, who was invariably a female, the seams had to be cut out, and the ragged and threadbare portions removed. The average loss in weight from this operation amounted to nearly twelve per cent. upon ordinary rags, and to about half that on old sheeting and linen of an analogous description. The rags were then washed thoroughly clean, and cut to the width of the linting machine. Before describing the process of linting, I must call attention to the peculiar structure of the article which it produced. If the reader will take a piece of the old-fashioned lint in his hand, he will find, on endeavouring to pull it to pieces, that he can do so with the utmost ease in one direction, but not in another. On examining it in a strong light he will see the reason of this. All the threads which run in one direction are but very slightly frayed or scraped, and remain nearly as strong as when they came from the loom ; but the threads which run cross-wise are reduced to hairs of infinitesimal thinness—though none are cut through—the rest of their substance being raised into a soft "fluff," which constitutes the lint. The process by which this result was attained has been thus described by a writer in *Chambers' Journal*, to whom we are indebted for several of the preceding facts :—

"On visiting the lint-maker at her work, we find her seated in a lofty attic of a dingy house in a back street not far from the bank of the Thames, where the river runs towards Limehouse. In order to get at her apartment, we have to pass through a series of hanging gardens of damp rags, for the most part less than a foot square in size, and which, having been washed clean are hung out to dry upon the staircase and landing, the weather being 'mizzly' out of doors. From such a manifold demonstration, we conclude that the lint-maker we have come to visit, by introduction of a friend who employs her, if she works for the middleman, works also on her own account, and cultivates a connection. On entering the room, we find her seated in front of the linting-machine, a rude and primitive instrument, about the size of the stool of a banker's clerk, and not a whit more ingenious in its construction. The affair is just the shabbiest of all shabby contrivances for bringing the edge of a sharp blade, about fifteen inches in width, to bear upon a little platform beneath. There is a kind of treadle worked by the foot, which assists the hands of the manipulator in using the knife. Upon the flat surface of the little platform is stretched the rag, or that portion of it undergoing the operation which has to be linted. A simple contrivance keeps the rag partially strained. As the knife hangs in its frame over the cloth, its edge is parallel with one line of the threads, and, of course, perpendicular to the other line. Several of these machines are at work in the room, and the blades are rising and falling with a dull, thumping, scraping sound continually. As the blade descends, it cannot much injure the threads whose course is parallel with itself, for obvious reasons ; but it would, being very sharp, cut through the others were it allowed to descend with sufficient force. The force of the descent, however, is regulated by the dexterity of the worker, so that it shall only partly sever the cross-threads ; and at every fall, while the knife is down, and its edge imbedded in the partly severed threads, the blade is forcibly shifted in the direction of those threads for a certain small space. It is this horizontal shifting of the sharp and heavy blade of the knife upon the strained rag while it is half cut through, which, by disintegrating those threads that cross the blade at a right angle, and raising nine-tenths or more of their entire substance into a soft woolly pile, produces the lint. It is worthy of remark, that the threads which, lying horizontally with the knife, escape serious injury by the process, render an important service by preventing the disintegrated pile from being detached from the surface of the rag by the violent passage of the blade."

The preparation of lint by steam power has been made the subject of several patents since the above description was written. A suitable fabric is now woven expressly for the lint manufacturer in lengths of 100 yards. This forms the raw material, and takes the place of linen rags. Having been imperfectly bleached, it is sent to the lint-maker, who completes the bleaching, and extracts impurities consisting chiefly of lime and the bleaching agents left in the texture. The cloth is then stoved and wound on rollers ready for the linting process. In the best machines, the pile or nap is raised upon the cloth by knives making upwards of 500 strokes a minute. The motion of these knives or scrapers is rotary in some machines and vertical in others. The latter motion is stated to be practically the best, as the knives moving vertically beat and soften the cloth upon which they raise the pile. A good machine will produce about eighteen yards or two pounds of lint per hour. The fabric after leaving the machine is passed through the calender and mechanically divided into pounds. It is then rolled and labelled ready for use.

After having compared several specimens of the new lint with the almost obsolete rag-lints, I am at a loss to account for the prejudice which still exists against the former. The machine-made lints possess all the valuable qualities of the older products, are much cheaper, and are sold in regular pieces, which can be cut up without waste. There are certain people who invariably cavil at all improvements, which they scornfully term "new-fangled notions ;" and I cannot help thinking that the objections which have been raised against the machine-made lints proceed from some of these lovers of the past.

B.

PLASMA PLUMBI.

BY CHARLES S. TILYARD.[*]

SOME months ago the writer suggested a combination of Goulard's extract of lead with glycerine (glycerole of lead) as a substitute for Goulard's cerate.

The fluidity of that compound has been found an objection to its application in some cases, and has led him to modify it by combining the extract with plasma. The result is a preparation of the consistence of an ointment, which may be modified at pleasure by increasing or diminishing the quantity of starch or arrow root.

Take of Glycerine,	2 fluid ounces.
Sol. subacetate of lead	3 ,, drachms.
Camphor	10 grains
Bermuda arrow root	1½ drachms.

Rub the arrow root into a fine powder, and having mixed the glycerine and extract of lead, stir it into the mixture. Pour the whole into a capsule and heat over a spirit lamp *cautiously, constantly stirring*, until it becomes transparent, and assumes the consistence of paste. Having powdered the camphor by means of a few drops of alcohol, rub a little of the plasma with it in a mortar until well incorporated, then add the remainder, and stir a few minutes.

When first made it is viscid and ropy, but in a day or two loses these properties, and becomes at the ordinary temperature (say 60° F.) of the consistence of a soft ointment.

LOBELIA INFLATA.

[COMMUNICATED BY E. PARRISH, OF PHILADELPHIA.]

SOME thirty years ago a shrewd empyric, named Thomson, obtained great celebrity in this country as the author of a crude system of practice, known as *Thomsonianism.* Like many of his predecessors in the same line, his chief pretensions rested on the exclusion of all mineral poisons from his materia medica, and the use of the spontaneous products of the vegetable kingdom, especially stimulants, diaphoretics, and emetics, which he gave pretty indiscriminately, and in heroic doses.

The works of Thomson were addressed to the popular comprehension, and accorded so well with the prejudices and prevailing tendencies of our economical and partially educated rural population, that they furnished to thousands what they deemed a sufficient medical code for every man to be his own doctor. The favourite remedies of this school were drawn from our own woods and way-side thickets which, previously, had been little studied therapeutically, so that, with all his errors, Thomson was quite a pioneer in testing a number of remedies which have since come to be recognized as valuable. Of these, one of the most interesting is *Lobelia*, or Indian Tobacco.

This little herb is common throughout the northern and middle states of North America, where it is an inconspicuous weed, with an erect hairy stem, about two feet high, putting forth numerous scattered serrated leaves and small terminal blue flowers disposed in leafy racemes, which begin to appear in July, and continue to expand in succession till nipped by the frost of October. The fruit, which is the most active part of the plant, is a characteristic little inflated capsule, inclosing numerous very small seeds; from this the plant takes its specific name, *Lobelia Inflata.* We have several very handsome members of this family decorating our fields and way-sides; of these the *Lobelia Cardinalis*, with its splendid scarlet flowers, will attract the attention of every observing traveller.

The whole plant, *Lobelia Inflata*, is officinal with us, but the seed is sold and dispensed separately; it is an emetic with decided narcotic properties, acting not unlike tobacco, which, indeed, it so much resembles in its general aspect as to have gained the name of Indian tobacco. Its preparations enter into a great variety of cough medicines; it is used with success in the treatment of spasmodic asthma and croup, and even in febrile affections, for similar sudorific purposes to the antimonials, digitalis, &c. The dose of the herb is from five to twenty grains; of the tincture, from one to four fluid drachms.

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[*] Read before the Maryland College of Pharmacy.

The chemical and pharmaceutical history of lobelia early claimed the attention of Professor Procter, of this city, and to him we owe the discovery of its peculiar and powerful alkaloid, *lobelina*. Mr. William Bastick, of London, made a similar discovery, though not until after the publication of Professor Procter's paper in the American Journal of Pharmacy. This alkaloid is an oily liquid, forming, with acids, crystallizable salts, which are, of course, extremely poisonous, and, if introduced into medicine, would soon take their places among the potent and useful narcotic medicines.

CHEMICAL NOTES.

A supposed New Element, probably of the Sulphur Group.—Whilst examining the residues left in the purification of crude selenium from a seleniferous deposit, from a sulphuric acid manufactory, for *tellurium*, by the method of spectrum analysis, Mr. Crookes observed a *bright green* line suddenly to appear and disappear under circumstances which led him to the conclusion that a hitherto unrecognized element was present, the isolation of which is now engaging his attention. As far as he has gone, the following appear to be the properties of this new substance, both in solution and in the dry state. 1. It is completely volatile below a red heat, both in the elementary state and in combination (except when united with a heavy fixed metal). 2. From its hydrochloric solution it is readily precipitated by metallic zinc, in the form of a heavy black powder, insoluble in the acid liquid. 3. Ammonia added very gradually until in slight excess to its acid solution gives no precipitate or coloration whatever, neither does the addition of carbonate or oxalate of ammonia to this alkaline solution. 4. Dry chlorine passed over it at a dull red heat unites with it, forming a readily volatile chloride, soluble in water. 5. Sulphuretted hydrogen passed through its hydrochloric solution precipitates it incompletely, unless only a trace of free acid is present; but in an alkaline solution an immediate precipitation of a heavy black powder takes place. 6. Fused with carbonate of soda and nitre, it becomes soluble in water; hydrochloric acid added in excess to this liquid producing a solution which answers to the above tests, 2, 3, and 5. The smallest trace of this substance, whatever it may prove to be, introduced into the burner of the spectrum apparatus gives rise to a brilliant green line, perfectly sharp and well defined upon a black ground, and almost rivalling the *sodium* line in brilliancy. It is not, however, very lasting, owing to its volatility, which is almost as great as selenium, a portion introduced at once into the flame merely shows the line as a brilliant flash, remaining only a fraction of a second; but if it be introduced into the flame gradually, the line continues present for a much longer time. The elements amongst which alone it must occur, if not really new, are antimony, arsenic, osmium, selenium, and tellurium; these and their compounds have been rigidly scrutinized in the spectrum, by Mr. Crookes, without exhibiting a trace of the green line characteristic of the substance in question.

Tungsten, and some of its Applications.—Bernoulli lined a Hessian crucible with charcoal, and placed in it some pure tungstic acid, over which was placed a layer of charcoal; he kept the crucible at a white heat for an hour, in one of the furnaces of the Royal Iron Foundry at Berlin, the acid was reduced, but the metallic mass exhibited no signs of fusion. In another experiment, the Hessian crucible was heated till it began to fuse, with the same negative result. Bernoulli then heated the metallic mass in a crucible made of the best American graphite, protected in the most complete manner; the heat was greater than ever observed in any puddling furnace, the slag from the coke running in a thin stream through the bars of the grate, the tungsten had not however melted; and hence the author concludes, that with our present means this metal must be pronounced to be infusible. When grey cast iron turnings were heated to an intense white heat in a graphite crucible, with powdered charcoal and ten per cent. of tungstic acid, the alloy formed had the properties of steel; it was very sonorous, had a clear colour, a pure fracture, and was malleable; with fifteen per cent. of tungstic acid the alloy was still steel, but hard and not sufficiently malleable. With twenty per cent. the hardness was greater and the malleability less; with white iron, even when charcoal dust was added, no steel could be obtained, the alloy was white in fracture, and imperfectly malleable. The waste cast iron turnings of the workshop may hence be used for preparing directly a cast steel, to which the tungsten imparts great hardness; if the iron does not contain too much sulphur or phosphorus, or silicon, a very useful rough cast steel may be obtained by fusing it directly with a quantity of powdered wolfram, proportionate to the per centage of carbon which it contains. The carbon in Bernoulli's alloys amounted to about one per cent. The following is the method adopted by Bernoulli for preparing pure *tungstic acid*:—Powdered wolfram is fused with excess of carbonate of soda in an iron crucible, the fused mass dissolved and boiled to reduce manganic acid, and filtered. The solution, which consists of tungstate and carbonate of soda, is neutralized with nitric acid, and the tungstate of soda crystallized out. This is dissolved and treated with nitric acid, and the precipitate of hydrate of tungstic acid is well washed. It is then dissolved in ammonia, which leaves a residue of niobic and silicic acids, the evaporated liquor deposits a fine crop of crystals of tungstate of ammonia. This is well washed with water, and then repeatedly treated with fresh quantities of nitric acid for some days, to remove nitrate of ammonia. The acid is finally washed out and gently heated, by which it is obtained of a fine pure sulphur yellow colour.

Effect of the presence of Metals and Metalloids upon the electric conducting power of pure Copper.—Messrs. Matthieson and Holzmann have communicated to the Royal Society the results of their investigations on this important subject. Taking the conducting power of silver as equal to 100, they find that of the purest copper they could obtain to be 93·08. When combined with only 0·05 per cent. of carbon the conducting power fell to 74·91; when combined with 2·5 per cent. of phosphorus the conducting power was reduced to 7·24; with 0·95 per cent. of phosphorus to 23·24; and with 0·13 per cent. to 67·67. Copper, combined with 5·40 per cent. of arsenic, had its conducting power diminished to 6·18; with 2·80 per cent. to 13·14; and with mere traces of arsenic to 57·80. The authors found that the assertions lately made, that copper alloyed with a small amount of arsenic cannot be drawn out into fine wire, are not correct. Copper alloyed with traces of zinc had its conductivity reduced to 85·05; with 0·48 per cent. of iron to 34·56; with 1·33 per cent. of tin to 48·52; with 2·45 per cent. of silver to 79·38; and with 35 per cent of gold to 65·36.

*Estimation of Phosphoric Acid.**—The following is the method of operating recommended by Chancel, in the most complicated cases, *e.g.*, in the analysis of ashes, soils, iron ores, coprolites, mineral waters, &c. Heat the weighed substance with strong nitric acid, drive off too great an excess of acid, dilute with water, and, if necessary, filter. Eliminate from the diluted solution, first, the sulphuric acid by means of nitrate of baryta, then the chlorine by means of nitrate of silver, collecting each precipitate on a filter. That done, the iron is next reduced to the state of proto salt, by passing an excess of sulphuretted hydrogen through the filtered liquid: the excess of silver which had been added is precipitated, together with any other metal that may be present, the sulphides of which are insoluble in the acid solution. The action is complete when the precipitate has agglomerated and the liquid is quite limpid. Before filtering it is necessary to expel all the sulphuretted hydrogen from the solution; this result is rapidly obtained by passing a current of carbonic acid gas through until the gas which escapes ceases to blacken acetate of lead paper. Under these conditions the estimation of phosphoric acid is exact, and presents no difficulty. It is effected by adding to the filtered solution an excess of acid nitrate of bismuth, allowing the precipitate to deposit, then collecting it on a filter, and, after washing with boiling water, drying, calcining, and weighing. The nitrate of protoxide of iron having a remarkable stability, there is no fear of the peroxidation of the iron before the addition of the acid nitrate of bismuth, provided that we operate at the ordinary temperature. The filtered liquid is again treated with sulphuretted hydrogen, which removes the excess of bismuth. The other bases may then be estimated in the filtrate by the ordinary processes. The precipitated phosphate of bismuth ($BiO_3\,PO_5$) may be diffused through water, decomposed by sulphuretted hydrogen, and the filtrate tested with nitrate of silver. The author now recommends the following method for preparing the test solution of acid nitrate of bismuth:—Dissolve 68·45 grammes of neutral crystallized nitrate of bismuth ($BiO_3\,3\,NO_5 + 10\,HO$) in a quantity of nitric acid representing 68·5 grammes of anhydrous nitric acid, and add water until the solution occupies exactly the volume of a litre. Each cubic centimetre of the re-agent thus prepared will precipitate one centigramme of phosphoric acid.

Pasteur on Fermentation.†—This ingenious chemist has continued his interesting researches.

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* See present Vol., p. 35.

† See Present Vol. p. 33.

The quantity of carbonic acid obtained during the fermentation of grape sugar is not sufficient to satisfy *exactly* the equation—

$$C_{12} H_{12} O_{12} = 2 (C_4 H_6 O_2) + 4 (C O_2).$$

A portion of the sugar disappears, being resolved into succinic acid and glycerine, which are constant and necessary products of the alcoholic fermentation. Pasteur represents the change by the equation—

$$49 (C_{12} H_{11} O_{11}) + 109 HO = 12 \underset{\text{Succinic acid.}}{(C_8 H_6 O_8)} + 72 \underset{\text{Glycerine.}}{(C_6 H_8 O_6)} + 60 (CO_2).$$

He found these two substances (succinic acid and glycerine) in wine, beer, cider, and, in fact, in all liquids that had undergone the alcoholic fermentation. The fundamental conclusion drawn by Pasteur from his researches he embodies in these words :—" As to the interpretation of the whole of the new facts which I have met with in my researches, I think that whoever considers them impartially will see that fermentation is a correlative act of *life*, and of the organization of globules, and not of *death*, or the putrefaction of these globules. Still less does it appear to be a phenomenon of contact, where the transformation of sugar proceeds in the presence of the ferment, without yielding anything to it or taking anything from it." A complete account of M. Pasteur's researches will be found in the ***Annal[illegible] de Chemie et de Physique.***

Chemical Constitution of Narcotine, and of its Products of Decomposition.—Messrs. Matthiessen and Foster have communicated to the Royal Society a preliminary notice of researches into this subject. They obtained from Mr. Morson a quantity of Narcotine prepared with scrupulous care from the residues which had accumulated during the preparation of very large quantities of codeine and morphine from opium of various qualities and from various sources. The results of all their analysis agree best with the formula $C_{22} H_{23} NO_7$, differing slightly from that of Wöhler and Blyth, viz., $C_{23} H_{25} NO_7$. They operated on several pounds of narcotine, and observed nothing to warrant the announcement made by Wertheim and Hinterberger, that there probably exists several varieties of this base. To cotarnine, another base obtained by the oxidation of narcotine, they assign the formula $C_{12} H_{13} NO_3$. At present no *rational* formula can be assigned to narcotine, though, according to the formula adopted by the authors for it and cotarnine, it contains the elements of the latter base and meconin, thus :—

$$\underset{\text{Narcotine.}}{C_{22} H_{23} NO_7} = \underset{\text{Cotarnine.}}{C_{12} H_{13} NO_3} + \underset{\text{Meconin.}}{C_{10} H_{10} O_4}.$$

By distilling 20 grains of narcotine with concentrated hydriodic acid, 19 grains of pure iodide of methyl were obtained, a quantity which corresponds as nearly as could be expected with three atoms of iodide of methyl for one atom of narcotine. This base contains therefore three atoms of methyl so combined as to be easily separable; and it seemed to the authors very probable that when it is distilled with potash, according to the conditions of the experiment, sometimes pure ammonia, and at other times methylamine, $C H_5 N$, dimethylamine, $C_2 H_7 N$, or trimethylamine, $C_3 H_9 N$, are produced.

HENRY M. NOAD.

THE DEBUSSCOPE.—This name has been given to a recent French invention, which consists of two silvered plates, highly polished and of great reflective power, placed together in a framework of cardboard or wood, at an angle of seventy degrees. On being placed before a small picture, a design of any kind, no matter how rough, or whether good or bad, the debusscope will reflect the portion immediately under the eye, on all sides, forming the most beautiful designs; and, by being slowly moved over the picture, will form new designs to any extent. The instrument gives the design in such a manner that it can be made stationary at pleasure until copied. It is, therefore, an inexhaustible treasure to draughtsmen and others. Setting aside the utility of the debusscope altogether, it can be made the means of gratification in the drawing-room, and, doubtless, will soon assume its proper place along with the microscope and stereoscope as a source of amusement.

SULPHATE OF CINCHONINE.—The great expense incurred in the hospitals and infirmaries of the French army, by the amount of sulphate of quinine employed in the treatment of intermittent fevers, especially in Corsica and Algeria, has led, besides the extension of prophylactic measures, to the endeavour to obtain substitutes for the quinine. After various proposals, which have met only with indifferent success, the Salt of Cinchonine has been recently experimented on with most satisfactory results in the French hospitals.—*Bull. Gén. de Thérap.*

RIMMEL'S PERFUME VAPORIZER.

This apparatus is designed for the purpose of diffusing the fragrance of flowers and other volatile perfumes in theatres, ball-rooms, and in any situations where a rapid and effectual mode of perfuming the air is required.

It consists, as shown in the sectional engraving, of a water bath heated by a spirit lamp; above the bath is placed an inner basin, containing the perfume to be vaporized. When the water in the lower cavity is made to boil by the action of the lamp, the steam generated has no other mode of escape but through the central tube, which is curved upon itself, so that it forms a ring lying in the perfume. This ring is perforated with holes for the escape of the steam, which, rising through the more volatile perfume, carries with it the odorous particles; and escaping at the perforations in the lid, diffuses them with great rapidity, so that they spread over a large space in a very short time.

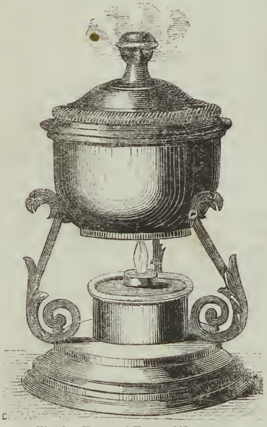


Fig. 1.—External Form of Vaporizer.

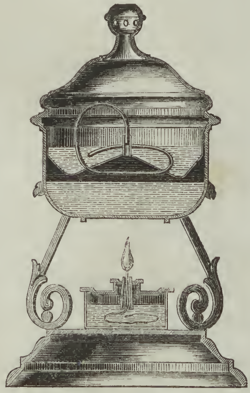


Fig. 2.—Sectional View of Vaporizer, showing the internal arrangement.

If we compare the operation of this simple and elegant instrument with the means previously adopted for perfuming the air on a large scale, its advantages are obvious. By the employment of the water bath all possibility of the perfume being burnt is avoided, consequently it retains its delicate and refreshing fragrance. As all perfumes are volatile there is no difficulty in diffusing any scent required, and, if necessary, medicinal substances requisite to purify the air can be added to the perfume, or used separately.

It is not open to the objection so frequently and justly made to the common perfume lamp with a platinum ball, of generating by the imperfect combustion pungent and irritating vapours which neutralise the effect of the perfume. Nor like fumigating pastiles and other similar contrivances which require to be burnt, does it produce that oppressive incense-like odour which is so unpleasant to most persons. On the contrary, the scent of any flower required—rose, violet, jasmin, or of any artificial combinations, such as Eau de Cologne, or aromatic vinegar, &c. &c., are volatilized without change, and diffused with a degree of rapidity that is very remarkable.

We have tested the machine very thoroughly. On placing it in action in the hall of a moderate sized house, we found that its diffusive power was so great that every room was perfumed in less than five minutes; and a large assembly room, containing three hundred persons, was delightfully and pleasantly perfumed in an incredibly short space of time. Brought in with the desert, it quickly replaces the no longer pleasant odours of the dinner, and will, doubtless, be very generally used for this purpose. We can add no stronger testimony to its power than to state, that it is capable of removing the noxious smell remaining after the use of that which is, with the bitterest irony, termed the *fragrant* weed. Surely it requires no other recommendation to introduce it to the notice of every lady in the kingdom.

LHOTE'S APPARATUS FOR MAKING EFFERVESCING BEVERAGES.

This apparatus is designed for the purposes of preparing seltzer or soda water, and other effervescing beverages. Its external form is shown in the accompanying engravings. Internally it is divided into two distinct compartments by a perpendicular division, extending from the handle to the spout. Each of these compartments has an opening above for the purpose of introducing the materials employed, and a spout for pouring out the liquid when required for use. The apparatus is employed by filling both compartments to the brim with pure cold water, and then pouring out a small quantity so as to equalize the amount of fluid in each division. There are then placed on one side eight scruples of bi-carbonate of soda, and on the other seven scruples of tartaric acid. These are readily caused to dissolve by stirring with two wooden spatulas, used in the manner shown in Fig. 1; after which the apertures are closed by placing the perforated capsules over the openings. On pouring from the beak the two fluids escape in equal proportions and mingle in the glass, thus producing a refreshing effervescing beverage without the slightest trouble. The advantages of this simple contrivance are evident. Being formed of porcelain the apparatus is not liable to corrode or to impart any unpleasant taste to the contained liquids. It is most simple both in construction and in use, and cannot possibly get out of order. There is no possibility of any explosion, or escape of gas, as none is liberated until the fluids are poured from the apparatus. It affords a supply of effervescing drink which may be kept without deterioration for many days. There is no possibility of any undissolved portions of the saline bodies employed escaping into the glass, as the internal arrangement of the apparatus prevents their escape.

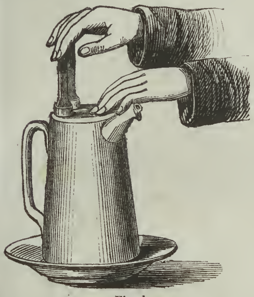


Fig. 1.

Should it be requisite to make any additions to the beverage, these should be placed previously to pouring in the water in the compartments used for the reception of the acid, and the vessel should be held whilst being filled in the position indicated in Fig. 2, so as to avoid adding too much water, which would afterwards have to be poured away. The addition of two ounces of powdered white sugar and a glass of wine forms an exceedingly refreshing and delightful beverage. Any syrup, such as that of ginger, lemon, &c., may be placed in the drinking glass before the soda water is poured into it.

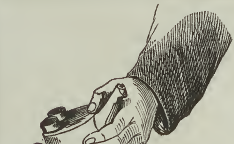
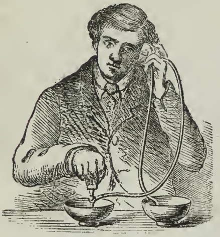


Fig. 2.

We have tested this cheap, simple, and efficient contrivance in our own household, and find that it is exceedingly efficient; producing, without trouble, a constant and ever ready supply of effervescing drink, and that at a moment's notice. We should think that during the summer months it would be likely to meet with a large sale, particularly if made a feature of during the hot weather.

SAVORY AND MOORE'S PATENT EAR DOUCHE.



Messrs. Savory and Moore, of New Bond-street, have just issued, under the above title, a very useful contrivance for the purpose of syringing the ear. It is well-known that deafness frequently arises from the hardening of the natural waxy secretion of the canal; this not unfrequently collects in considerable quantity, and by obstructing the tube leading to the internal ear prevents the vibrations of the air reaching the membrana tympani, and so causes serious, and in some cases almost total deafness. The only safe mode of removing this hardened secretion is syringing the ear with warm liquid; this operation, simple as it may appear, cannot, with an ordinary syringe, be performed by the patient himself, but necessitates having recourse to a medical man, and is also accompanied by the great inconvenience that the fluid injected runs down the side of the neck, and has to be received in towels placed for its reception. These inconveniencies are avoided *in toto* by the Patent Ear Douche, which consists, as shown in the annexed engraving, of an Indian-rubber ball attached to a brass tube with an arm; this tube contains a spherical valve which allows the free ascent of the liquid from the basin into the ball, when the latter is allowed to expand after pressure, but prevents its return when the fluid is expelled; hence it has to pass up the Indian-rubber pipe and is injected with the required amount of force through the small nozzle into the ear; this nozzle is contained in a glass, shaped like a cupping-glass, which has a second tube leading from it to another basin. When in use the glass is held, as shown in the figure, close against the face, so that the fluid escaping, after having been injected into the ear, does not run down the side of the neck, to the manifest discomfort of the patient, but flows away into the second basin.

It is needless to do more than call attention to the facility and readiness with which this contrivance can be used; we have not unfrequently known patients suffer for weeks from very severe deafness, owing to the accumulation of wax in the external ear, before they could afford the time and trouble requisite to have recourse to a surgeon; whereas with this instrument they would have been enabled to remove the secretion at any time convenient to themselves. We are much pleased with the ingenuity of this very admirable contrivance.

FANSHAWE AND JAQUES' HAND EMOLLIENT.

We have also to call attention to a very ingenious application of Indian-rubber as a substitute for Sponge or Flannel, for the purpose of cleansing the hands. It consists of a disk about four inches in circumference, slightly convex on each surface, which is formed in a series of concentric rings. After soaping the hands the Emollient is used in the same manner as a flannel, and it cleanses the skin very efficiently. It is moulded out of one piece of red rubber, consequently it is not liable to get out of order, and will evidently wear well. The flexible nature of the material enables it to be applied to the different curvatures of the skin without inconvenience. We should think that it will be found to form a most useful addition to the appliances of the bath-room.

SOAP OF IODIDE OF POTASSIUM WITH GLYCERINE.—Glycerine at 28° or 30°, 1000 grammes; animal soap in powder, 50 grammes; dry iodide of potassium in powder, 130 grammes. Dissolve both in water. Mix all in a marble mortar and stir well for fifteen minutes, and flavour with oil of bitter almonds, 2 grammes.—*Bulletin Gén. de Thérapéutique.*

THE PURIFICATION OF COD-LIVER OIL.—M. Jeannel gives the following as the result of various experiments in the removal of the disagreeable odour and taste of cod-liver oil:—1. That the essential oil of bitter almonds, in the proportion of 7½ grains to 25 drachms of even the most infected oil, is completely successful. 2. One grain of anhydrous hydrocyanic acid dissolved in water, will disinfect, but does not perfume the same amount of oil. 3. Distilled laurel water, in the proportion of once or twice the volume of the oil, is, however, the best means of affecting the result; the mixture is agitated in a bottle, and the liquids are then separated by a funnel after 48 hours' rest; and the oil, if necessary, filtered through paper. M. Jeannel states that the above process does not remove raneidity, which is different from the fishy odour and taste.

THE MONTH

MORE FALLACIES CONNECTED WITH THE RESEARCH FOR ARSENIC.—We have received, through the Secretary of the United Society, a full report of a supposed case of child-poisoning at Cheltenham. In criticising the evidence given in this case, our weekly contemporary, the *Chemical News*, exposes the ignorance of the medical men, who stated that they had discovered arsenic in the body of the deceased. The facts of the case may be thus briefly recapitulated:—An illegitimate child died rather suddenly in the Cheltenham Workhouse, and a post-mortem examination of the body was made by the medical officers. By a series of clumsy experiments, made without the slightest method, these registered guardians of health and life arrived at the conclusion that the child had been poisoned by arsenic, and they confidently gave evidence to that effect. At the express desire of several of the jury, the portions of the stomach which remained were sent to Mr. Horsley, the recently-appointed analyst at Cheltenham. When the inquiry was resumed, this experienced chemist detailed the experiments he had made, all of which went to prove that not a trace of arsenic was to be discovered in any of the matters handed over to him. Upon this the medical men, Dr. Bird and Mr. Saunders, recalled the evidence they had previously given. A formal censure for "originating a charge of so serious a nature, and which had no foundation in fact," was the only punishment which these rash men received.

THE DOCTOR AND THE CHEMIST.—A correspondent takes us to task for having recently stated, in a paragraph under the above heading, that the learned apothecary, (Dr. Arkwright) was repudiated by his professional brethren. He says that such is not the case, and that the medical men of Accrington took the same view of the case as he did.

LAW INTELLIGENCE.—*The Attorney-General* v. *the Royal College of Physicians*. This case lately came before Vice-Chancellor Sir W. P. Wood, upon a demurrer to an information filed by the Attorney-General, at the citation of the Masters, Wardens, and Society of the Art and Mystery of Apothecaries of the City of London, for the purpose of obtaining a declaration that the defendants, the Royal College of Physicians, could not lawfully issue any licence purporting to authorize the licentiate to compound and supply for gain the medicines prescribed by him, or in any other way to exercise the calling of an apothecary, or purporting to establish any new order of medical practitioners. The Vice-Chancellor decided that the demurrer could not be allowed, and that it was not a case in which any good could be done by granting leave to appeal.

GIGANTIC ROBBERY.—In the March number of the *Druggist*, an American journal, published at Cincinnati, we have discovered no less than eight columns of literature which have been stolen from the pages of this journal. We like to see our articles in those periodicals which have the honesty to acknowledge the source whence they are derived, but we must protest against such a wholesale conveyance of our property by a journal which makes a practice of "looting," and of reproducing its spoils as original articles.

CAHILL *v.* LONDON AND NORTH-WESTERN RAILWAY COMPANY.—The letter of Mr. Cahill and accompanying report of this case arrived too late for notice in our present number. We shall refer to them in our next.

NEW PRIZE FILTER.—The prize of 5*l.*, offered in our February issue for a filter case, has been awarded by the Silicated Carbon Filter Company to Mr. Gouldsmith Rolls, C.E., 4, Church-court, Clement's-lane, E.C.

A WEALTHY CHEMIST.—The following is translated from the *Independente* of Naples, of the 18th ultimo:—"Three hundred Hungarians have arrived at Galatz to join the Hungarian legion. A chemist of Constantinople, a native of Hungary, paid the expenses of their journey, amounting to 43,000 francs, out of his own pocket. When a private individual makes such sacrifices, what may be expected from a whole nation?" Could not the patriotic but anonymous chemist be induced to join the United Society?

INTERNATIONAL EXHIBITION OF 1862.—The amended and additional decisions of her Majesty's Commissioners on points relating to the International Exhibition of 1862 have recently been issued. The Commissioners have definitely fixed upon Thursday, the 1st of May, 1862, for the opening of this second great Show of the World's industry, which will be situated in the immediate neighbourhood of the ground occupied in 1851 by the first. All works to be exhibited should have been produced since 1850. The French Government have appointed a commission to organise and arrange in classes of science, arts, manufactures, and raw material the various articles intended to be sent by French exhibitors to the international display of next year. His Imperial Highness Prince Napoleon is to be President of the Commission, and M. Le Play is most probably the officer who will be sent to this country.

CONVERSAZIONI.

MAY is the month for conversazioni. Since the 1st instant several of these delightful meetings have been held by metropolitan societies, and others are announced to come off during the month.

Last evening (Tuesday) a very numerously-attended meeting was held at the house of the *Pharmaceutical Society*, Bloomsbury-square. We must congratulate the Committee of Management upon their excellent arrangements, and the extensive and varied character of the scientific instruments collected for inspection; every department of chemistry was adequately represented. Amongst various other articles of interest, we particularly noticed the Binocular Microscope, invented by Mr. Wenham, and exhibited by Messrs. Smith and Beck. There was a splendid collection of Photographs burnt into glass according to the plan proposed by Monsieur Joubert, and exhibited by Messrs. Powell, of Whitefriars' Glass-works. Not the least interesting of the philosophical instruments was Professor Way's new Electric Light, in which the light is emitted from a small stream of mercury conveying the current from the battery. Professor Wheatstone's private telegraph was exhibited in action, and excited much attention. Messrs. Johnson and Sons contributed a very fine assortment of show crystals; also collections of chemical products, showing their various stages of manufacture. An aluminium helmet, of the most exquisite design, showed strikingly the capabilities of that metal. The remarkable lightness of the metal renders it peculiarly suitable for military accoutrements. Messrs. Morgan Brothers exhibited several novelties, some of which are noticed in another portion of our journal; and the Plumbago Crucible Company showed several superior furnaces, and samples of the various crucibles manufactured by them. Coffey's patents, for the rapid evaporation of fluids at a low temperature, were exhibited in action. Bunsen and Kirchhoff's experiments on Spectrum Analysis, which have been so fully described in these pages were displayed. A series of Photographs contributed by Professor Warren De la Rue, showed the most remarkable phenomena connected with the recent total eclipse of the sun as witnessed in Spain. Messrs. Moseley, of London, contributed specimens of the Taranaki steel stand, and articles manufactured therefrom. Mr. Dahlke showed several of his filters, and some of the much discussed Torbane-hill mineral employed by him as a filtering medium. Messrs. Griffin also showed their improved gas furnace in action. A large number of articles of *vertû* were displayed, and Dissolving Views, representing scenes in Nubia, were exhibited. This was the first annual conversazione held by the Society since the completion of the new laboratory, and all the rooms of the Society's house were thrown open. The great crowd of visitors, amongst which we observed many gentlemen distinguished by their connection with Science and Art, rendered a minute inspection of the various objects exhibited next to impossible.

A conversazione of the *Society of Arts*, the first of the present session, was held at the Society's House on Saturday, the 4th instant, and was exceedingly well attended. In the Great Room were hung the pictures of the late John Cross, the painter of "The Clemency of Cœur de Lion" in the New Palace of Westminster. The whole of the rooms were thrown open. Arrangements were made by which Mr. Ladd was enabled to exhibit Bunsen and Kirchhoff's spectrum experiments. Messrs. Smith and Beck, Messrs. Powell and Lealand, and Mr. Baker, each exhibited binocular microscopes, constructed upon the principle recently perfected and given to the world by Mr. F. H. Wenham. The binocular arrangement of the microscope is probably the greatest optical improvement that has been made for many years past, as it does for the microscopic object what the stereoscope does for the photographic image, viz.—enables it to be seen in its true form. Mr. Charles Jones exhibited, in the Great Room, a series of transparent photographs, which were projected on to a screen, 20 ft. square, by means of the oxy-hydrogen light. The subjects shown comprised views in the Holy Land, Italy, France, &c., and groups of statuary. Mr. Thomas Battam, jun., exhibited several Etruscan vases, being reproductions from originals at the British Museum and in other collections, illustrating the perfection to which fictile manufactures have now attained. Mr. Richard A. Green contributed a case of jewellery, principally of classical design. Mr. Coryton exhibited models of his wave-line system of constructing vessels. Mr. West contributed specimens of his fluid compass, in which compensation for expansion and contraction in the fluid is provided for by the introduction of a corrugated diaphragm at the bottom of the box. Some of Mr. Abel's fuses, for firing mines and cannon, were exhibited by Mr. Ladd. The fuses require only a very weak electric current to ignite them. Mr. Maillard exhibited his chronometer compass and diagrams for determining the longitude. Dr. Cattell exhibited specimens of purified gutta percha and varnishes. A collection of Indian paintings in talc, remarkably highly finished, were contributed by Mr. Blair. The Exhibition of Patented Inventions was arranged in the Lower Room, and the various patentees attended to explain their models.

A meeting of a similar character was held at the *Ironmongers' Hall* on Wednesday, the 8th instant. Some idea of the value of the art treasures exhibited may be formed from their money worth, which was estimated at no less a sum than three millions sterling. The officers deserve great credit for the trouble they took in providing for the amusement and instruction of their guests, and we trust the success achieved will stimulate other city companies to follow suit. The hall presented the appearance of the various departments of the South Kensington Museum, all brought together and exhibited in one room. The eye and mind at first became confused among the many articles of *vertu* placed in such close proximity; but by degrees the excellent method displayed in the arrangement, allowed the formation of a clear perception and recollection of this diversified collection. The principal objects of attraction were the Palissy and Wedgewood ware, and the enamels of Limoges; some very unique specimens of ancient arms and armour; a few boxes of ancient keys, which threw Chubb and Hobbs far into the shade; a judicious selection of illuminated books, and a choice collection of engravings. The hand of a mummy, buried 1500 years B.C., and on the finger of which a gold ring was perfectly preserved, attracted great attention.

SOCIETY OF ARTS.

AT a meeting of the above Society, held on Wednesday, the 1st instant, and presided over by Peter Graham, Esq., Member of the Council, Mr. Julius G. Dahlke read the following paper on *Filtration and Filtering Media*:—

"In the observations which I shall have the honour of addressing to this Society upon Filtration and Filtering Media, I propose to deal with the subject in a popular and practical manner, rather than to treat it in an abstract and exclusively scientific spirit. But, before entering upon it, you will permit me to say that, having been but a short time resident in England, I have not yet succeeded in sufficiently conquering the difficulties of the language so as to express myself as clearly as is desirable. Errors in phraseology and pronunciation will, therefore, occur; but with the usual generosity of Englishmen, you will remember my actual position, and grant the indulgence of which I shall stand in so much need.

"From various modern works upon the civilisation of the Egyptians, Chinese, Japanese, and other ancient oriental nations, we learn that at a very early period filters were used by them. These appear to have been vessels made of unglazed earthenware, or of porous stone. There is no evidence to show either that they were acquainted with the true nature of those matters which should be separated from water intended for the use of man; or that they had studied the subject of filtration in a scientific spirit. In this neglect Europe imitated them until near the close of the seventeenth or beginning of the eighteenth century, when the French began to pay attention to the subject, and employed silk, wool, cotton, sponge, and sand as their filtering media. But about the middle of last century a lias was discovered in Picardy, which, owing to its effective action, came largely into use. The mode of using it was particularly simple, being in the form of a false bottom placed in the cistern, through which the water descended. Afterwards the attention of Englishmen was directed to the subject, and about seventy years ago filters were introduced which contained three layers of media—viz., sand, gravel, and charcoal. These were for filtering by descent; but another system was subsequently adopted and patented for filtering by ascent: this, however, was complicated, and never became in any way largely known.

"The French seem to have resumed their lead by improving their apparatus; still, however, and although many alterations were made, and minor improvements introduced, nothing of any consequence was effected until very recently, when another body of persons again took up the subject in England, where filtration is now very commonly adopted.

"The same media have been employed in various ways; the chief modern efforts in the way of effecting improvements having been, with only a few exceptions, rather artificially to increase the pressure, and so to increase the rate of filtration, than to improve the character of the media employed.

"The multitude of recent inventions in connection with filtering apparatus is so great that it would occupy far too much time for me to mention them. It is sufficient to say that there is hardly a porous substance in existence which has not been employed for filtering purposes. At one time wool and cotton were the filtering agents most widely adopted; but their use was abandoned, because after being exposed to moisture they undergo decomposition. Asbestos cloth has been proposed as a substitute for them, but it does not appear to have found much favour.

"During the past seventy years gravel, sand, and charcoal, used as a mixture, have been the agents most in vogue amongst filter makers; and it is only lately that due attention has been paid to charcoal as the most efficient filtering medium. Its use is much more frequent now, because not only has it a powerful detergent effect, but it possesses also the peculiar advantage of not becoming foul, while it protects from decomposition other bodies in contact with it.

"It has been often asked, why animal charcoal is so effective as a filtering medium? Some attribute this to the presence of so much carbon; but that this is an insufficient reason is shown by the fact, that although coke contains more carbon than sand, yet it is not superior as a filtering agent.

"Animal charcoal filters about three and a half times more rapidly than either coke or sand, while it is also greatly superior in this, that it removes many inorganic impurities held in solution, over which the former substances exert no power.

"It appears that the more porosity a filtering medium possesses in itself, the more rapidly does it filter, and the greater is the effect it produces on the water. The latter will be still more decided when, with a greater porosity, peculiar substances are combined.

"This leads me to believe that we may attribute the extraordinary filtering quality of animal charcoal to the fact, that its principal component parts are lime and carbon, so combined as to secure a wonderfully fine porosity. Vegetable charcoal, although very porous, and containing far more carbon, has less effect on water.

"I have observed that another substance, of which I shall presently speak, and which (although of an entirely different origin) possesses great similarity in this respect, may in many cases be successfully substituted for animal charcoal. Indeed there are, doubtless, numerous substances and compounds which may be used with as great effect. Do we not see that nature supplies the most beautiful waters from limestone beds? It is hardly necessary to say, could we but imitate her action, that we should be able to do more in this as well as in other things; but we must content ourselves with as much success as our defective knowledge of her laws will permit us.

"Although we know of powerful agents for the removal of different impurities from water, circumstances may and do interpose which render it extremely difficult to obtain the medium in the requisite form for our purpose, and there is nothing yet discovered which will perfectly meet all the requirements of the case. Those who assert that it is possible to construct an apparatus to act as a universal filter for purifying any kind of water effectively whatever may be the impurities, remind me of the vendors of certain patent medicines who vaunt their nostrums as capable of curing every disease. Their claims are about equally trustworthy.

"I should classify the art of filtration into three systems: viz.—1st, where the action takes place simply on the surface of the filtering medium; 2nd, where the whole bulk of the filtering medium is calculated to operate on the water, and the detergent effect in its most delicate form may be produced; and, 3rd, where both of these systems are conjointly employed.

"The first system requires a filtering medium of such a fine porosity that its pores must be smaller than the minute particles composing the impurities suspended in the water. Such an agent, of course, must sooner become clogged than a filtering medium of coarser porosity, and which is meant to act with its whole bulk on the water. But both systems employed together may prove to be useful in several instances, as in the case of domestic filters. The greatest failing of these is, that they must become clogged, and the more they are liable to this the more effectively they act. We often hear of self-cleansing domestic filters; but the fact is, that no invention of the kind has been made yet without involving complications too great for the purposes of ordinary domestic use.

"However, it is not difficult to make a filter for general domestic purposes, although the effective self-cleansing of such an apparatus is still a problem to be solved.

"If the filtering medium employed in this case be solid, and of a fine porosity in its upper part, the clogging impurities will not only be retained on the surface, but may be easily removed by scraping; and then, if the lower part of the filtering medium be prepared of a material capable of producing a detergent effect, it will act the more readily through not being interfered with by the rougher and clogging impurities.

"It should be remembered, too, that in most cases we have here only to deal with some rougher impurities which have found their way into the water on its passage from the waterworks or other source to the tap of the consumer.

"Being deeply interested in the subject of filtration, I have never omitted an opportunity of carefully inspecting those house cisterns which came under my observation; I have, however, seen but few to which the attention necessary to secure the due cleansing had been paid. Most of them were loaded with mud, and in some of them I actually noticed the growth of vegetation (fungi). I conclude from my observation, that hardly one-fourth of the house cisterns in London are in such a condition as to afford the consumer a supply of wholesome water like that which flows from the main.

"The difficulty, or, I may say, the impossibility, of keeping water which is stored in cisterns entirely free from accidental contamination, should lead us to provide a domestic filter capable of removing chemical impurities: as, for example, any lead which may be held in solution; in fact, the practice of filtering water preserved in cisterns, and intended for domestic use, cannot be too warmly recommended.

"To remove lead from water, Professor Faraday recommends the practice of stirring up animal charcoal with the water so contaminated, the same being then allowed to settle. I have found, however, that, by using this material in a manner to be described hereafter, I never failed in producing the same effect by means of filtration.

"It is easy enough to purify small quantities of water; but the greater the quantity the greater are the difficulties of purification, especially when a certain chemical effect has to be produced.

"It will not be necessary for me to dwell upon the filtering processes required for large water-works, as the supply is generally taken from such sources that the common sand filter-bed answers the purpose; and where the water is too hard for domestic uses, the beautiful process of Dr. Clark will meet and remedy the evil.

"Experience shows that it is not prudent to adopt the same means of purification for every kind of water, and I should make a difference in the treatment of the water used for domestic and that employed for manufacturing purposes. In the latter it will be often of the greatest importance to have the water as pure as possible; whereas certain so-called impurities in water may not be at all injurious to health. When we consider that no one would call human blood impure which contained 420 grains of saline matter per gallon, I do not know that we are justified (of course speaking in relation to health) in calling water impure which contains small quantities of certain saline matters, particularly when we have no medical evidence that the small portions of them drunk in such water ever did any harm. Besides which, it should be remarked, that the quantity of lime and magnesian salts drunk in water must be greatly exceeded in amount by that which enters the system in the food.

"Only those waters which contain much sulphate of lime and magnesia have been observed to derange the process of digestion; as, for instance, the waters of the New Red Sandstone.

"Too pure water is distasteful, and unfitted for drinking purposes. In a case which came under my observation, the water taken from a certain well having a flat and disagreeable taste, proved on analysis to be remarkably free from impurities. In order to make this water more fit, or perhaps only more agreeable for use, I made such arrangements that, before it was filtered through a body of animal charcoal, some finely-dissolved organic impurities were added to it, and which were, of course, acted upon by the charcoal. I found that the mixed water had a pleasant taste after filtration, and even that it was somewhat sparkling, though I failed to recognise any difference in the unmixed water after it had passed through the same filter.

"There are cases where no good sources are available, and waters of all kinds must be used; it may therefore be, perhaps, of some interest to illustrate such a case: but before doing so I shall make a few remarks as to the nature of the filtering media which I prefer to employ.

"Solid filtering media have great mechanical advantages; however, I do not contend for their exclusive use, as I find it often advantageous to have loose filtering media employed conjointly with solids.

"Experience has convinced me that we could not employ a more powerful and efficient filtering medium than pure animal charcoal, in a well-regulated, fine, porous, and solid state. Unfortunately, however, no method has yet, to my knowledge, been discovered by which this substance can be moulded into a convenient shape without diminishing more or less its filtering qualities. What is required is some material which will bind the particles together without glazing them.

"Attempts have been made to produce solid animal charcoal filters by moulding the charcoal with the aid of bitumen and carbonising the latter; but it appears that the object in view cannot be arrived at in this way. In the first instance, as the proper consistency is not gained; next, by becoming glazed the charcoal loses many of its good qualities, and, at least, its rapidity in action will be diminished from its becoming less porous.

"Another serious objection to this medium, which is really a mixture of charcoal and coke, is to be found in the fact, that the filtering power of charcoal stands to coke as 15 to 4.

"Mineral bitumen (*i. e.*, coal-tar and coal-pitch) will produce this fatal defect in a higher degree than vegetable bitumen, as it leaves more solid residue after carbonisation; but animal charcoal will not adhere to it, and will not bind sufficiently, even when a great quantity of it is used, unless some vegetable charcoal is added. This in itself might not be looked upon as a great drawback—although it has not the filtering quality of animal charcoal—if it served to preserve the latter from the glazing effects of the carbonised bitumen; but it does not do this.

"Many well-known solid filtering media are used; but it is with them as with every other article in the market, some are very good and highly commendable, others less so, much of course depending upon the manner in which they are used, and the special purpose for which they were intended.

"I will now describe a composition which I have used with much success; but before doing so, I beg it may be distinctly understood that it is not my intention to place it above all other compositions, or to question the utility of similar filtering media.

"From the fact that the porosity of charcoal is greater than that of any other filtering agent, it is obvious that I should wish to employ it in my solid medium in as great a quantity as possible. However finding, as I have stated before, that it is impossible to make it into a solid body without impairing its quality, I tried to discover a material which could be used as a substitute for it. Being in some degree familiar with the use of the residue which the Torbanehill mineral, sometimes called bog-head coal, leaves after distillation, I turned my attention to it. After some experiments, I found that this substance, when moulded with bitumen, ceased to be effective, as is the case with animal charcoal. I, however, eventually discovered that this material, when saturated with oily or fatty matter, will easily adhere by the addition of a comparatively small quantity of clay, and can so be readily moulded. When well burnt, this mixture furnishes a very powerful filtering medium; it will remove colour and smell from water, and will reduce its hardness considerably, while at the same time its rate of filtration equals that of charcoal. In fact, recent discoveries have led me to the belief, that the residue of the Torbane-hill mineral alluded to, deserves more attention than has hitherto been paid to it, for it appears to possess many valuable properties which have been vainly sought in other bodies; but having not yet finished my researches, I must confine myself on this occasion to speaking of it merely with regard to its application to filtering purposes.

"To make the mixture more effective I add to it bone-dust, not only for the sake of the animal charcoal, but because it must necessarily shrink in the charring, an effect which enables me to regulate with great nicety the porosity of the filtering medium beforehand; for I find that the porosity of the mixture mainly depends upon the quantity and grain of the bone-dust which enters into its composition. I have also found that the use of oil instead of water for moistening the clay, prevents the too great shrinking of the moulded mass in the drying and firing process.

"By means of the process just described, I can produce filter-blocks of considerable size and of various shapes; by the use of which I am enabled to overcome a great many difficulties, and to work large quantities of water with a comparatively small filtering apparatus."

[Mr. Dahlke then described a very compact and exceedingly ingenious apparatus, by which 5000 gallons daily of impure water could be thoroughly purified.]

"If the quantity of water to be filtered be so great that a very large filter-bed is required, I prefer employing the preparation of the Torbane-hill mineral in a granular state rather than sand: for this reason, that it filters more than three times as quick, and is five times as light as the latter; consequently a ton of it will, by a layer of equal thickness, filter about sixteen times the quantity of water that a ton of sand would filter, with the advantage that the filtering would produce at the same time a greater decolorising effect and a considerable softening of the water. A clogging from the precipitation of chalk is not likely to take place, as this substance is separated in a crystalline and granular state. Moreover, those particles of the material which become saturated with organic impurities may, through calcination, regain the greater part of their former efficiency.

"I may remark, in conclusion, that filtration is not often resorted to on the Continent, with the exception of France and Holland. Manufacturers are very much afraid of adopting any improvements that demand an outlay of capital; and so in this case, they will often prefer using impure water to spending their money upon apparatus for purifying it.

"As for the water used for domestic purposes in Germany, the people are so apt to look up to a paternal government, even in matters concerning their health, that they never think of purifying the water supplied to them. To this apathy of the public may be ascribed, in a great degree, the comparative failure of the English water-works at Berlin."

An interesting discussion upon the relative merits of different filtering media followed. The speakers were Mr. Spencer, the discoverer of the Electrotype process; Mr. Atkins, of the Moulded Carbon Company, Dr. Waller Lewis, Mr. Painter, Mr. Danchell, Mr. Wentworth L. Scott, and Mr. Morgan.

BOARD OF TRADE RETURNS.

The Board of Trade returns lately issued for the first three months of the present year present some remarkable changes. In the value of our exports there has been a gradual decrease, owing to the disturbed state of the Continent and America. The total declared value of goods exported up to the 31st March was 27,669,249*l.*, and in the year 1860 it was 30,481,907*l.*, against 30,520,794*l.* in the first three months of 1859. Our imports for the first two months, however, show a considerable increase, the real value of the goods imported being 18,246,537*l.*, against 15,871,469*l.* in 1860, and 13,455,049*l.* in 1859. In dissecting the above value we find that corn shows the greatest increase, the total value of wheat being 3,514,065*l.*, against 529,162*l.* in 1860, and 840,256*l.* in 1859; of flour, 1,224,498*l.* in 1861, against 256,270*l.* 306,107*l.* respectively. Indian corn also shows an increase of upwards 400,000*l.*, as compared with last year. The value of the cotton imported was 3,979,789*l.*, against 5,337,797*l.* last year. Hides of all kinds show a great falling off. Copper also shows a great decline; also spelter is less than last year, but in other metals there is an increase. Sugar shows a slight increase, whilst in spirits there is a decrease. Wines show an increase of upwards of 242,000*l.* In silk there is a falling off, and in wool the decrease is upwards of 230,000*l.* In looking over the exports for the three months, dyes and dyeing stuffs nearly all show a smaller quantity exported. Palm oil is upwards of 14,000 cwt. less. Cocoa-nut, however, shows a slight increase. Nearly all other species show a falling off. Tea is rather more; whilst tobacco is much less. Wool, of British Possessions, shows a large increase, the total being 7,058,302 lbs. against 2,693,016 lbs., the great increase being to France and Belgium; but a slight falling off in foreign. The quantity of salt exported was 145,320 tons, and in 1860 it was 136,585 tons. The value of oil seed exported was 257,259*l.*, against 279,322*l.* The export of saltpetre was 4.262 cwt., against 6,155 cwt. Quicksilver shows a great decrease, 387,175 lbs. being shipped in 1861, against 659,905 lbs. in 1860.

Correspondence

UNITED SOCIETY OF CHEMISTS AND DRUGGISTS.

Offices, 2, Bell-yard, Doctors'-commons, E.C.
London, May 11, 1861.

SIR,—Will you have the goodness to invite the attention of your readers to the Prospectus which appears in your advertisement sheet.*

It will be observable that we are already in a condition to make a practical return for the 5*s.* membership fee. The offices, on an economical scale suitable to our infant state, are open for business appointments, references, inquiries, the reception of parcels, &c.; and employers and assistants in search of one another, as well as those wishing to negociate the transfer of businesses, partnerships, &c., will find their objects much facilitated by means of the *free* Register now open.

The Committee will feel much encouraged in their further efforts, by both town and country members availing themselves as frequently as possible of the advantages already provided.

Donations of books, &c., through the book post will be thankfully accepted.

In conclusion, the Committee will be glad of a prompt remittance from those gentlemen who have not yet sent in their subscriptions.

I am, Sir,
Your obedient servant,
C. F. BUOTT, Sec.

EFFECT OF THE AMERICAN CONFLICT ON THE LINT MARKET.

Sir,—The political results of the fratricidal conflict now raging in the United States are beyond the ken of the most far-sighted, and any speculations as to their nature and magnitude would be out of place in the pages of your Journal; but the effects of that civil war upon the trade of the pharmacist seems to us a fit subject for discussion, and we therefore do not hesitate to call your attention to the unprecedented demand for lint occasioned thereby.

At this season it is usual for the wholesale houses to be crowded with American orders; how stands the case at present? Our remarks are, of course, confined to our own experience, which we have every reason to believe, however, coincides with that of all other exporters. The orders received are scarcely worthy of the name. Except for two articles, the demand may be described as *nil.* These articles are plaisters and lint. The demand for the latter at this moment greatly exceeds the supply, and it is with a view to incite possible producers of this fabric that we venture to make a few remarks on the present and past history of its production, hoping that you may be induced to take the subject in hand, and thereby influence its future.

For the credit of Great Britain, and for the sake of the poor wounded combatants, let us hope that the frauds practised during the Crimean war will not be repeated. At that time, as is well known, lint realized fabulous prices, and much that was lint in name only was supplied to our gallant army. The Government, with its usual wisdom, purchased the worst article to be met with at the highest price. The officers were too clever to buy in the usual and proper markets, but must needs supply themselves where no other purchaser of above one pound weight would dream of applying. The consequence was that lint which had been laid aside as totally unfit for sale, was bought up at nominal prices, and sold to the Government at exorbitant rates.

The lint now in use may be divided into three classes: Old linen, new linen, and cotton. The first, as regards antiquity in more senses than one, is that composed of old linen rags. The demand for this is now very limited; it is, however, still preferred to all other kinds by a few of the most eminent surgeons. The materials of which it is made are procured from the rag-dealers, and necessarily contain a vast amount of impurities. The cost of linting these, twelve years back, was from 9*d.* to 1*s.* per lb., and the lint then sold at from 2*s.* to 5*s.* per lb.

The conversion of rags into lint was effected by simply scraping with a knife. The first improvement on this process consisted in the application of a machine worked by the foot, the cloth being placed upon a roller and drawn under the knife by hand. This reduced the cost of manufacture nearly one half. The next improvement was introduced by a well-known manufacturer in the North of England, who, in consequence, for a time almost monopolised the market. A new linen lint (or, at all events, a lint containing more flax than any at present sold as linen) was then supplied at 4*s.*, cotton lint realising at the time 2*s.* 6*d.* to 3*s.* per lb. Some eleven years back Mr. Taylor took out his patent, which consisted mainly in the substitution of mechanical means for manual labour. This, coupled with the increasing scarcity of rags, gave a fresh impetus to the new linen lint trade, and nearly gave a *quietus* to the production of lint from rags. At the same time steam power was applied to this manufacture; and soon after steam machinery was employed in the linting of cotton also. At the present time a very much larger quantity of cotton lint is consumed than of that composed of flax and cotton, and known as linen. It will be as well to add, that an admixture of cotton is required in machine-made lint, in order to insure its tearing. It is, however, a popular fallacy to suppose that the fact of lint being tearable both ways proves its goodness of quality; it proves its rottenness only.

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* This prospectus will be found on page x.

The demand created by the Crimean war gave a stimulus to the lint trade; and during the last ten years five or six patents have been taken out in connection with it. The most important, that of Mr. Taylor, has been subjected to many vicissitudes. They originated mainly in the circumstance of his having placed himself in the power of parties who sacrificed his permanent interests to their own temporary ones. This, combined with other causes, led him into difficulties, and obliged him to contract with another firm for the production of his lint. Unfortunately that firm also got into difficulties, the right to manufacture thereby reverting to the patentee. Messrs. Waithman, the firm in question, soon, however, recommenced the manufacture on their own account with machinery of improved construction, for which they obtained letters patent. They continued it until 1859, when an arrangement was come to, whereby they ceased to manufacture on condition of being paid a royalty. Taylor's lint has never had justice done to it. He has been unfortunate in his coadjutors. Continual legal expenses and several royalties have kept it under water, and it has not been able to hold its ground against that produced by other manufacturers; the consequence being, that although the name still commands a certain sale, lint of much better value is now produced. We enclose you samples of this, also of the "Crimean," to which we have referred, some of which we purchased and relinted. You will also find enclosed samples of Taylor's, and of various old linen and cotton lints. We trust that this manufacture will now receive the attention due to its importance. Such has not been its fate hitherto; hence this letter from

Yours truly,

Morgan Brothers.

NOTES AND QUERIES

To our Readers.—The following articles have been pressed out of the present number by news which could not have well been omitted:—"The Natural Order of Plants—Leguminosæ—Sub-order Papilionaceæ;" the second part of Mr. Reynolds' treatise on the New Dyes obtained from Coal Tar; and a long descriptive paper on Slugg's Druggists' Microscope, and the uses to which it may be applied. These papers will appear in our next. The publisher has requested us to state that the February number is out of print.

Syr. Hemidesmi Ind.—"A Subscriber" (Leeds.)—Several formulæ for this preparation have been forwarded to us. From H. A. W. (Scarbro') we have received the following:—"℞. Rad. Hemides. Ind. contus, ℥iv. Aquæ bull. Oj. Digest in covered vessels, with gentle heat, four hours, and strain; set it by till the sediment subsides, add to the liquor *twice* its weight of refined sugar, and dissolve by aid of steam or water heat. A more aromatic syrup is said to be obtained by following:—Bruise 1 ℔ av. of the root sufficiently to separate the bark by sifting, and reject the wood. Add to the bark equal bulk fine sand, and moisten with four ounces water; pack it well in a displacement apparatus, add as much water as it will absorb, macerate four hours, and displace the liquor by more water. Reserve the first six ounces; add water till it passes through tasteless, then evaporate the latter portion to three ounces, in which, with the addition of the first six ounces, dissolve sixteen ounces sugar with as moderate heat as possible." J. C. (Edgware-road,) has also sent us, through the United Society, a formula similar to the first. From A. P. (Newcastle, Ireland,) we have received the following formula, recommended by Bell, in his valuable work on medicines, published by Neligan, of Dublin:—"Take root of Hemidesmus Ind. ℥xvi; refined sugar Hj; dist. water Oiij. Bruise the root sufficiently to separate the bark by sifting, and reject the wood; add to the bark an equal bulk of washed sand, moisten with water (three or four ounces) so as to insure its intimate mixture, and pack it well in a displacement apparatus; add as much water as it will absorb, macerate for four hours, and displace the liquor by the addition of more water; reserve the first six ounces, add more water, till it passes through tasteless, then evaporate the latter portion to three ounces, in which, with the addition of the first six ounces, dissolve the sugar with moderate heat."

Gun-Cotton.—E. C. Kirby.—The most simple method of preparing this substance consists in immersing, for a few seconds, well carded cotton in a mixture of equal parts, by volume, of sulphuric acid (the commercial oil of vitriol) of the specific gravity 1·845, and nitric acid of the specific gravity 1·500. The cotton, when well saturated, is to be removed, and after being squeezed to expel as much as possible of the excess of adhering acid, well washed in clean cold water. As soon as the water no longer reddens litmus paper the washing may be considered sufficient. The gun-cotton thus prepared is to be cautiously dried at a heat not exceeding 212°;—it is safer to dry at about 150°. The cotton prepared by this means explodes well. A formula for making a very soluble cotton for photographic collodion will be given in the Dictionary of Photographic Chemicals now publishing in these pages.

Balneum Baretginense.—H. S. G. (Bourton-on-the-Water.)—The Barèges Bath is prepared by one of the following formulæ:—1. Crystallized sulphuret of sodium, 3½ oz.; chloride of sodium, 1½ oz.; gelatine (dissolved), 4 oz.; water, q. s. 2. Dry sulphuret of potassium, 4 oz.; water, 16 oz.; dissolve, and add the solution to the bath; then further add, of sulphuric or hydrochloric acid, ½ oz., previously diluted with water, 8 oz.

Mineral Succedaneum.—"Forceps" requests us to give him the formula and mode of preparation of metallic stopping for the teeth. 1. The amalgam of gold is perhaps the best tooth cement. To prepare this, pure gold is to be heated in a bright iron ladle, with enough pure mercury to render it of a doughy consistence at the heat of boiling water; when cold the excess of mercury, if any, must be removed by pressure in a piece of chamois leather. For use, a little must be kneaded, as hot as possible, in the hand, and at once wedged into the cavity of the tooth. 2. A cheap and efficient stopping can be made of zinc filings, 1 part; mercury, 2 parts; mixed and applied at once. It is not very durable.

Remedy for Psora.—"A Subscriber."—The remedy is prepared by boiling one part of quicklime with two parts of sublimed sulphur in ten parts of water until the two former are perfectly united. During the boiling it must be constantly stirred with a piece of wood; and when the sulphur and lime have combined, the fluid is to be decanted and kept in a well-stopped bottle. A pint of the liquid is sufficient for the cure of several cases; it is sufficient to wash the body well with warm water, and then to rub the liquid into the skin for half-an-hour; as the fluid evaporates a layer of sulphur is left upon the skin. During the half-hour, the acarus is killed, and the patient is cured; it is only needful, then, to wash the body and to use clean clothes. In Belgium the treatment is introduced by first rubbing the body for half-an-hour with black soap, but this does not appear to be necessary—the only essential act is that of the careful application of the fluid sulphur. The remedy has proved successful in every case in which I have tried it. Since using, the military hospitals of Portsmouth have had no further need of itch wards.—F. S. (Southsea.)

H. J. T. (Portland.)—In the rudimentary treatises on Electricity and Galvanism, published by John Weale, High Holborn, London, you will find all the most important facts included in these two departments of knowledge. The mysterious operations alluded to by you could not have been performed by the aid of any electric or galvanic machine with which we are acquainted.

"Chemicus" (Taunton) wishes to know how to get rid of the smell of methylated spirit. The government have permitted the free use of methylated spirit for various purposes in the arts, because its objectionable smell prevents its use for those purposes to which pure spirit, upon which duty is paid, must be applied. Should any one discover a simple process for removing the smell, the mixture would not long remain exempt from duty.

W. D. G. (Philadelphia) wants some oil of Kukui, or Kukui nuts. They come from the Sandwich Islands.

T. T. is anxious to learn the address of Mr. Davis, late chemist of Guildford, Surrey.

Green Colouring Principle of Leaves.—When the properties of xanthine are compared with those recently attributed by Fremy to chlorophyl, one will be struck by the great analogy that exists between the two, and would be induced to suppose that the blue substance, which Fremy thinks he had isolated from chlorophyl, did not pre-exist in it, but that it was produced by an alteration of the primitive colouring substance. Facts show that this is probably the case. When a few drops of pure chlorhydric acid are added to an alcoholic solution of chlorophyl, it loses its beautiful green colour and becomes a yellowish brown. When excess of acid is added, the green colour reappears, with, however, a different bluish tint from the primitive. Now, if a few drops of nitric acid be added, it becomes an almost pure blue. All this occurs thus with xanthine.—*Filhol.*

Colouration of Iron and Steel.—M. Thirault, pharmaceutist of Saint Etienne, has been investigating the natural oxides of iron. In addition to ordinary rust, there is another oxide (the ferroso-ferric oxide) but slightly susceptible of alteration. Iron covered with this latter is protected from rust even in moist air. This kind of varnish is produced by the use of the following mixtures:—1. Chloride of mercury and sal ammoniac. 2. Perchloride of iron, sulphate of copper, nitric acid, alcohol, and water. 3. Per and protochloride of iron, alcohol, and water. 4. Weak solution of sulphide of potassium. These solutions are successively, and after the previous application has become dry, applied. No. 3 is applied twice; a bath of boiling water follows Nos. 3 and 4. The shade of colour is fixed by means of active friction with a piece of woollen goods, and with a little oil. The shade imparted is of a beautiful black, uniform in appearance. This process is used in the manufacture of arms at Saint Etienne; and by it have already been coloured—11,000 barrels and bayonets of English guns, 100 Egyptian guns, and 6,000 double French guns for the voltigeurs, and the sabre scabbards for the gendarmerie of the Department of the Loire. The price does not exceed 40 centimes for each arm. Thirault is now employing his process on different articles of hardware, machines, surgical instruments, &c. &c.—*Jour. de Chem. Med.*

TRADE REPORT.

London, May 13, 1861.

The value of money has remained the same, viz., 5 per cent. on first-class paper. There has been little or no improvement in business since our last; the continued unsatisfactory state of politics on the Continent as well as in America tend to limit purchases to the most urgent wants. Prices of produce, except in a few instances, are again lower; and whilst the present uncertainty exists, we cannot look for any marked improvement either in home trade or export business. Consols closed this evening at 91½ ⅝ for money, and 91⅞ 92 for the account.

In Chemicals, sales have been confined to mere retail lots at again reduced prices. Tartaric acid has been sold at 1*s.* 10*d.* to 1*s.* 10¼*d*; oxalic acid is now quiet at 8¼*d.* to 8½*d.*; citric acid has been purchased at 1*s.* 10*d.*, and is now dull at that figure; prussiate of potass has declined to 1*s.* 1½*d.* and 1*s.* 2*d.*, and bichromate to 9½*d.* A moderate business has been done in sal acetos at 10½*d.*; iodine is done at 4½*d.* to 5*d.* according to quality; cream of tartar is quiet, only small lots are selling at 130*s.* for fine; sulphate of copper continues dull at 31*s.*; a few parcels first sal ammoniac have been sold at 32*s.* 6*d.*, and seconds 31*s.*; flour of brimstone is sound, and is now worth 15*s.* 6*d.*; bleaching powder is held from 8*l.* 10*s.* to 9*l.*; refined saltpetre is better, the latest sales made were at 38*s.* to 39*s.*, after being done at 37*s.* to 37*s.* 6*d.*; soda crystals are quiet at 4*l.* 5*s.* to 4*l.* 7*s.* 6*d.* ex ship. An extensive business has been done in American spirits of turpentine by speculators: at one time the price rose to 56*s.*, but has since become dull, and closes at 48*s.* to 50*s.* Canada pot and pearl ashes have advanced to 88*s.* per cwt.

The Drug sales have gone off again rather better. Some Ceylon dark cardamoms brought 4*s.* 6*d.* to 5*s.* 1*d.*, and good Malabar 5*s.* A large parcel of jalap just arrived has been sold at 4*s.* to 4*s.* 8*d.*, and ordinary and stalky from 10*d.* to 2*s.* 10*d.* Castor oil has sold steadily at full prices. Some good and fine Turkey opium realised 17*s.* 6*d.* to 19*s.* Tinnevelly and Bombay senna has brought former rates. Oil of cassia has sold at easier prices, the last price paid being 9*s.* Oil of anniseed is more in request, sales made at 6*s.* 9*d.* to 6*s.* 11*d.* A large quantity of China soy has been taken on speculation, and now the prices rule firm at from 2*s.* 3*d.* to 2*s.* 5*d.*

PRICE CURRENT.

☞ *These quotations are the latest for* ACTUAL SALES *in Mincing Lane. It will be necessary for our retail subscribers to bear in mind that they cannot, as a rule, purchase at the prices quoted, inasmuch as these are the* CASH PRICES IN BULK. *They will, however, be able to form a tolerably correct idea of what they ought to pay.*

	1861.				1860.			
	s.	d.	s.	d.	s.	d.	s.	d.
ARGOL, Cape..per cwt.	90	0..	105	0	80	0..	100	0
French	60	0..	85	0	60	0..	80	0
Oporto, white	0	0..	0	0	0	0..	0	0
red	50	0..	51	0	58	0..	54	0
Sicily	85	0..	90	0	75	0..	80	0
Naples, white	85	0..	90	0	85	0..	90	0
red	0	0..	0	0	0	0..	0	0
Florence, white	95	0..	105	0	95	0..	105	0
red	95	0..	97	6	85	0..	95	0
Bologna, white	125	0..	130	0	125	0..	130	0
ARROWROOT, duty 4½d. per cwt.								
Bermuda ....per lb.	1	1..	1	4	1	3..	1	7
St. Vincent	0	2¾..	0	6	0	2¾..	0	6¾
Jamaica	0	2½..	0	4½	0	2 ..	0	5½
Other West India	0	2..	0	3¼	0	2..	0	3¼
Brazil	0	1½..	0	2¼	0	1½..	0	2¼
East India	0	1¾..	0	2½	0	1¾..	0	3
Natal	0	2½..	0	8	0	3½..	0	7½
Sierra Leone	0	2½..	0	3½	0	2½..	0	3½
ASHES,......per cwt.								
Pot, Canada, 1st sort	37	6..	38	0	32	0..	33	0
U. S., 1st sort	0	0..	0	0	0	0..	0	0
Pearl, Canada, 1st sort	37	6..	38	0	32	0..	32	6
U. S., 1st sort	0	0..	0	0	0	0..	0	0
BRIMSTONE,								
rough ......per ton	£8	5..	0	0	£10	0..	0	0
roll	13	10..	14	0	14	10..	15	0
flour	0	0..	15	10	16	10..	17	0
CAPERS,								
French......per cwt.	£3	0..	£5	0	£3	10..	£6	15

	1861.				1860.			
CHEMICALS	s.	d.	s.	d.	s.	d.	s.	d.
Acid—Acetic, per lb.	0	4 ..	0	4½	0	4..	0	4½
Citric	1	9½..	1	10	2	2½..	2	3
Nitric	0	5..	0	5½	0	5..	0	5½
Oxalic	0	8¼..	0	8¾	0	8½..	0	8¾
Sulphuric	0	0¾..	0	1	0	0¾..	0	1
Tartaric, crystal	1	10¼..	0	0	2	0..	2	0½
powdered.	1	11..	6	0	2	1..	0	0
Alum ......per ton	£6	5	£6	10,6	£7	5	£0	0
powder	7	10..	0	0	8	10..	0	0
Ammonia, Carbon, lb.	0s.	5¾d.	0	6d.	0s.	6½d.	0	6¾
	£	s.	£	s.	£	s.	£	s.
Sulphate ..per ton	14	0..	14	10	14	0..	14	10
Antimony, ore	16	0..	17	0	16	0..	17	0
crude, per cwt..	30s.	0d.	40s.	0d	36s.	0d.	38s.	0d
regulus	52	0..	53	0	50	0..	52	0
French star	51	0..	0	0	52	0..	0	0
Arsenic, lump	17	0..	18	0	18	0..	0	0
powder	9	0..	10	6	12	6..	14	0
Bleaching Powder	9	0..	0	0	11	3..	0	0
Borax, E. I. refined	35	0..	45	0	44	0..	64	0
British	65	0..	0	0	65	0..	70	0
Brimstone, roll	13	10..	14	0	14	10..	15	0
flour	0	0..	15	6	16	10..	17	0
Calomel ......per lb.	2	10..	0	0	2	10..	0	0
Camphor, refined	2	6..	0	0	2	3..	0	0
Copperas, green, pr tn.	65	0..	0	0	65	0..	0	0
Crrsiv. Sublimate, lb.	2	0..	0	0	2	1..	0	0
Green, Emerald, pr lb.	0	9..	1	0	0	9..	1	0
Brunswick, cwt..	14	0..	42	0	14	0..	42	0
Iodine, dry ..per oz.	0	4½..	0	5	0	6 ..	0	0
Ivory Blk. drop pr. ct.	8	0..	9	0	0	0..	0	6½

PRICE CURRENT—*continued.*

	1861.				1860.			
CHEMICALS.	s.	d.	s.	d.	s,	d,	s.	d.
Magnesia, Carbon. ct.	42	6	45	0	42	6	45	0
Calcined, lb.....	1	6	2	0	1	6	0	0
Minium, red, per cwt.	22	6	23	0	23	6	24	6
orange	35	0	0	0	36	0	0	0
Potash, Bichrom., lb.	0	9½	0	0	0	11	0	11¼
Chlorate........	0	10¼	0	0	0	11	0	11½
Hydriodate ..oz.	0	5¼	0	5½	0	7	0	7¼
Prussiate ....lb.	1	1½	1	2	1	3	1	3½
red..	2	2	0	0	2	3	0	0
Precipitate, red per lb.	2	9	2	10	2	10	2	11
white....	2	10	0	0	2	10	0	0
Prussian Blue	1	6	1	10	1	6	1	10
Rose Pink ..per cwt.	29	0	30	0	29	0	30	0
Sal-Acetos ....per lb.	0	10½	0]	0	0	11	0	0
Ammoniac, cwt.								
British ..	32	0	33	0	32	6	34	6
Epsom	8	0	8	6	8	0	0	0
Glauber	3	6	5	6	5	0	5	6
Saltpetre, refined....	38	0	39	0	41	0	42	0
Soda, Ash, per degree	0	2⅓	0	2½	0	2⅝	0	2⅞
Bicarbonate ...cwt.	13	0	13	6	15	6	16	0
Crystals....per ton	£4	10/	£0	0/	£5	5/	£0	0
Sugar Lead, white, ct.	38s.	0d.	39s.	0d.	38s.	0d.	39s.	0d.
brown..........	28	0	0	0	28	0	0	0
Sulphate Quinine, oz.								
British in bottle ..	7	6	7	10	6	6	7	0
Foreign	6	6	7	0	6	0	6	3
Sulphate Zinc ...cwt.	14	6	15	0	14	0	0	0
Verdigris ....lb.	1	3	1	5	1	8	2	0
Vermillion, English..	3	0	3	4	3	6	3	4
China....	2	6	2	8	2	9	2	10
Vitriol, blue or Roman per cwt...	32	0	33	0	35	0	36	0
CHICORY.... per cwt.								
Foreign (duty, 6s.) ..	16	0	17	0	12	6	13	6
COCHINEAL...per lb.								
Honduras, black	2	6	4	6	3	8	5	3
silver	2	6	3	2	3	2	4	0
pasty	2	2	2	4	2	10	3	1
Mexican, black......	2	8	3	4	3	6	4	0
silver......	2	5	2	8	3	2	3	3
Lima	2	8	3	6	3	3	4	0
Teneriffe, black	2	8	3	10	3	7	4	1
silver	2	5	2	9	3	3	3	4
COCOA (duty 1d. per lb.)								
Trinidad, red, in bond......per cwt.	65	0	96	6	75	0	97	0
gray	57	0	64	0	72	0	78	0
Grenada............	55	0	62	0	63	0	70	0
Dominica & St. Lucia	54	0	58	0	62	0	64	0
Para	60	0	65	0	65	0	68	0
Bahia..............	54	0	57	0	52	0	54	0
Guayaquil	63	0	63	6	70	0	73	0
COFFEE, in bond (duty 3d. per lb.)								
Jamaica, good, mid. to f................	73	0	105	0	72	0	100	0
low mid. & mid.	68	0	72	0	66	0	72	0
fine ordinary ..	65	0	67	0	64	0	65	0
good ordinary ..	62	0	64	0	59	0	63	0
ord. and triage..	50	0	60	0	46	0	59	0
Ceylon, Nat. gd. & f.	62	0	64	0	59	6	64	0
ordinary	57	0	61	6	56	0	58	6
Plantation, fine..	85	0	88	0	88	0	94	0
fine mid.	77	0	84	0	79	0	86	0
good mid.......	72	6	76	0	75	0	78	0
middling	68	6	72	0	70	0	74	0
fi. ord. to low md.	65	0	67	6	64	0	69	0
mixed and triage	50	0	63	0	48	0	65	6
Malabar and Mysore	58	0	78	0	57	0	78	0
Madras	58	0	76	0	58	0	76	0
Tellicherry	64	0	90	0	62	0	88	0
Mocha, fine	110	0	120	0	120	0	128	0
garbled	93	0	105	0	98	0	120	0
ungarbled	62	0	100	0	66	0	86	0
Batavia, yellow	63	0	76	0	65	0	78	0
pale and mixed..	58	0	62	0	54	0	64	0
Sumatra............	52	0	56	0	50	0	52	0
Padang	55	0	61	0	54	0	60	0
African	70	0	85	0	80	0	90	0
Brazil, f. ord. & wshd.	60	0	70	0	60	0	72	0
good ord.	55	0	60	0	55	0	59	0
ordinary	52	0	54	6	51	0	53	0

	1861.				1860.			
COFFEE.	s.	d.	s.	d.	s.	d.	s.	d.
La Guayra	60	0	76	0	62	0	78	0
Costa Rica, mid. to f.	67	0	80	0	66	0	84	0
good and f. ord.	60	0	66	0	62	0	65	0
Cuba, mid. to fine ..	67	0	80	0	68	0	80	0
f. ord. & f. f. ord.	63	0	66	0	62	0	68	0
ord. & good ord.	57	0	62	0	55	0	63	0
Porto Rico	60	0	78	0	62	0	78	0
St. Domingo........	58	0	64	0	56	0	64	0
DRUGS,	£.	s.	£.	s.	£.	s.	£.	s.
Aloes, Hepatic, pr. cwt.	3	10	9	10	3	10	9	0
Socotrine	6	0	24	0	5	10	25	0
Cape, good......	2	0	2	2	1	15	1	18
inferior ..	1	8	1	17	1	2	1	14
Barbadoes......	2	0	24	0	2	0	22	10
Ambergris, gray, p. oz.	34s.	0d.	42s.	0d.	30s.	0d.	42s.	0d.
Angelica Root. pr. cwt.	28	0	40	0	35	0	42	0
Aniseed, China star ..	70	0	80	0	98	0	100	0
German, &c.	32	6	40	0	32	0	42	6
Balsam, Canada, pr. lb.	1	3	0	0	0	10	1	0
Capivi	1	10	2	0	1	11	2	0
Peru........	4	5	4	7	4	10	4	11
Tolu	3	9	4	0	3	10	4	0
Bark, Cascarilla, cwt.	24	0	49	0	30	0	46	0
Peru. crwn. & gry. pr. lb.	1	7	2	8	1	10	3	4
Calisaya, flat ..	3	10	4	0	3	4	3	7
quill ..	3	6	3	10	3	0	3	6
Carthagena	1	2	2	0	0	8	1	0
Pitayo	1	6	2	2	0	10	1	10
Red	2	0	6	0	2	0	6	0
Bay Berries, per cwt,	22	0	40	0	50	0	52	0
Borax..............	20	0	45	0	20	0	37	6
Tincal	32	0	50	0	30	0	45	0
Bucca Leaves ....lb.	0	4	1	3	0	4½	1	2
Burgundy Pitch, p. cwt.	0	0	0	0	0	0	0	0
Camomile Flowers..	40	0	90	0	100	0	170	0
Camphor, China....	210	0	215	0	160	0	0	0
Canella Alba........	22	0	42	0	25	0	45	0
Cantharides ..per lb.	2	2	2	3	2	7	2	8
Cardmms. Mlbr. good	4	9	5	0	4	7	4	10
inferior ..	4	6	4	7	4	0	4	6
Madras ..	2	10	4	0	3	5	4	4
Ceylon ...	4	9	5	1	3	9	0	0
Cassia Fistula, pr. cwt.	20	0	35	0	28	0	36	0
Castor Oil, 1st pale, lb.	0	5¾	0	6½	0	6½	0	7
second	0	5¼	0	5½	0	6	0	6¾
infr. and dark	0	4¾	0	5	0	5¼	0	5¾
Bombay, in casks	0	4	0	4½	0	4	0	4¼
Castorum	1	0	28	0	5	0	20	0
China Root..per cwt.	9	0	10	0	9	0	10	0
Coculus Indicus	12	0	13	0	12	6	14	0
Cod-liver Oil, per gal.	4	0	5	3	4	9	7	0
Colocynth, apple, p. lb.	0	10	1	4	0	11	1	9
Colombo Root, per cwt.	15	0	47	6	12	0	46	0
Corosus Nuts, per cwt.	15	0	47	6	21	0	26	0
Cream Tartar, per cwt.								
French	130	0	132	6	145	0	147	6
Venetian	135	0	0	0	150	0	152	6
gray	122	6	125	0	127	6	132	6
brown..........	115	0	120	0	0	0	0	0
Croton Seed........	80	0	105	0	60	0	90	0
Cubebs	130	0	140	0	170	0	180	0
Cummin Seed	36	0	40	0	22	0	30	0
Dividivi............	12	0	13	0	11	0	13	0
Dragon's blood, reed.	£7	0	£14	0	£7	0	£14	10
lump	5	0	12	0	5	0	12	0
Galangal Root......	0	16	1	5	1	8	1	9
Gentian Root	0	16	0	18	0	16	0	17
Ginger, preserved, in bd.	s.	d.	s.	d.	s.	d.	s.	d.
(duty 2d. lb.) per lb.	0	6½	0	7½	0	9	0	10
Guinea Grains. per cwt.	46	0	48	0	60	0	63	0
Honey, Narbonne ..	60	0	85	0	70	0	90	0
Cuba	30	0	40	0	22	0	32	0
Jamaica	38	0	50	0	26	0	58	0
Ipecacuanha, per lb ..	3	4	3	7	4	0	0	0
Isinglass—								
Brazil............	1	6	4	0	1	10	4	2
East India	1	0	3	6	1	10	4	6
West India	3	2	3	9	3	10	4	3
Russian, long staple	12	0	13	0	12	0	13	0
leaf	9	6	12	0	9	6	12	0
Simovia..	2	0	2	6	1	6	2	6
Jalap..............	4	2	4	8	4	3	4	4

PRICE CURRENT—*continued.*

	1861.				1860.			
DRUGS.	s.	d.	s.	d.	s.	d.	s.	d.
Juniper Berries, p. cwt.								
German and French	10	0..	10	6	9	0..	9	6
Italian	10	0..	12	0	9	0..	10	0
Lemon Juice, per deg.	0	1 ..	0	1⅛	0	0⅞..	0	0
Lichen Islandicus, lb.	0	0..	0	0	0	0..	0	0
Liquorice... per cwt.								
Spanish	83	0..	90	0	83	0..	93	0
Italian	85	0..	95	0	90	0..	100	0
Macaroni, Genoa, p.lb.	0	3..	0	6	0	4..	0	6
Naples....	0	4..	0	5½	0	4..	0	5½
Manna, flaky	3	3..	3	9	4	9..	5	3
small	1	6..	2	0	2	6..	2	7
Musk ....per oz.	26	0..	34	0	22	0..	27	0
Myrabolans, per cwt.	8	6..	12	0	8	6..	12	0
Nux Vomica........	8	0..	9	6	13	6..	15	0
Opium, Turkey	14	0..	18	6	20	0..	24	0
Egyptain....	6	0..	13	0	6	0..	14	0
Orris Root.. per cwt.	27	0..	30	0	30	0..	36	0
Pellitory Root	0	0..	0	0	0	0..	0	0
Pink Root....per lb.	1	3..	1	4	1	0..	1	3
Quassia (bit.wd.) ton	£3	10..	4	0	£10	0	£11	10
Rhatania Root . p lb.	0s.	8d.	0s.	9d	0s.	6d.	0s.	8d
Rhubarb, China, rnd.	1	0..	2	9	1	2..	3	0
flat..	1	2..	3	0	1	4..	3	2
Dutch, trimd.	3	3..	3	6	3	5..	3	9
Russian	11	0..	0	0	13	6..	14	6
Saffron, Spanish	46	0..	50	0	50	0..	55	0
Salep......per cwt.	£12	0s.	£14	0	£9	0	£12	0
Sarsaparilla, Lima..	0s.	10d..	1s.	2d	0s.	10d..	1s.	2d
Para	0	10..	1	2	0	11..	1	2
Honduras	0	11..	1	6	0	11..	1	4
Jamaica .	1	3..	2	5	1	2..	2	6
Sassafras....per cwt.	10	0..	12	0	9	0..	10	0
Scammony .. per lb.								
virgin	28	0..	35	0	30	0..	32	0
second	14	0..	24	0	14	0..	26	0
Seedlac	50	0..	70	0	45	0..	55	0
Seneka Root........	2	2..	0	0	2	0..	2	2
Senna, Calcutta	0	1½..	0	2½	0	2..	0	2½
Bombay	0	2½..	0	3½	0	2..	0	3½
Tinnevelly	0	2¾..	0	10	0	4..	0	7¾
Alexandria	0	4..	0	7	0	4..	0	6
Shellac, orange, pr.ct.	180	0	190	0	190	0..	215	0
liver & garnet.	150	0	160	0	200	0..	215	0
block	120	0	145	0	180	0..	187	6
bttn.dk.to mid.	150	0	160	0	175	0..	190	0
good and fine..	180	0	185	0	200	0..	220	0
Snake Root	1	2 ..	1	3	0	10..	1	2
Spermaceti, refined..	1	2..	1	4	1	10..	0	0
Squills	0	1..	0	2	0	2..	0	3
Sticklac	70	0..	100	0	65	0..	87	0
Tamarinds, E. India.	10	0..	12	0	9	6..	11	6
W.I. per cwt.	16	0..	32	0	15	0..	40	0
Terra Japonica,								
Gambier.. per cwt.	16	6..	17	6	16	0..	16	9
Cutch	22	6..	23	0	26	0..	27	0
Valerian Root, Engl.	20	0	.40	0	20	0..	40	0
Vanilla,								
Mexican .. per lb.	30	0..	70	0	40	0..	80	0
Brazil............	0	0..	0	0	14	0..	20	0
Wormseed ..per cwt.	5	0..	10	0	23	0..	0	0
FARINA, Scotch	20	0..	25	0	16	0..	16	6
GUM ....per cwt.	£.	s.	£.	s.	£.	s.	£.	s.
Ammoniac, drop	2	10..	5	0	2	15..	5	0
lump....	0	15..	1	15	1	0..	2	0
Animi, fine pale	15	0..	16	0	14	10..	15	10
bold amber..	13	0..	14	10	13	0..	15	0
medium	9	0..	11	11	8	10..	11	10
small & dark.	5	0..	8	5	5	0..	8	0
ordinary dark	2	10..	5	0	2	10..	5	0
Arabic, E.I.f. palepickd	2	10..	3	0	2	10..	3	2
unsorted, good to f.	1	18..	2	10	1	15..	2	8
red and mixed	1	4..	1	10	1	4..	1	12
siftings	0	0..	0	0	0	18..	1	3
Turkey, pkd. gd. to fi.	5	10..	7	10	5	10..	7	10
second & infr.	2	2..	5	5	2	5..	5	5
in sorts	1	10..	2	3	1	14..	2	0
Gedda	1	6..	1	7	1	10..	1	12
Barbary, white......	1	11..	1	13	1	10..	1	11
brown	1	8..	1	10	1	8..	1	10
Cape	0	16..	0	18	0	15..	0	18
Assafœtida, fair to gd.	1	0..	5	0	1	0..	4	10
Benjamin, first qual.	18	10..	35	0	18	0..	35	0

	1861.				1860.			
GUM.	£.	s.	£.	s.	£.	s.	£.	s.
Benjamin, 2nd qual.	8	5..	16	10	8	10..	16	10
3rd ,,	3	0..	7	10	3	0..	7	10
Copal, Angola red ..	5	0..	6	10	4	7..	5	0
pale..	4	5..	5	0	3	6..	4	10
Benguela	4	10..	5	10	3	10..	4	5
Sierra Leone lb.	0s.	10d.	1s.	9d	0s.	9d.	1s.	9d
Manilla, pr. ct.	15	0..	43	0	15	0..	43	0
Dammar, pale, pr. ct.	44	0..	59	0	40	0..	46	0
	£.	s.	£.	s.	£.	s.	£.	s.
Galbanum..........	7	0..	9	0	8	0..	10	0
Gamboge, pkd. pipe .	6	0..	8	0	5	10..	8	10
in sorts ..	4	0..	5	10	4	0..	5	15
	s.	d.	s.	d.	s.	d.	s.	d.
Guaiacum ....per lb.	0	8..	1	6	0	10..	1	9
Kino ...... per cwt.	95	0	.120	0	90	0..	105	0
Kowrie	16	0..	21	0	14	0..	15	6
Mastic, pkd., per lb..	7	6..	8	6	8	6..	9	6
Myrrh, gd.& fi., pr. ct.	140	0	180	0	160	0	230	0
sorts	80	0	130	0	90	0	150	0
Olibanum, pale drop.	60	0..	68	0	48	0..	54	0
amber & yellow	40	0..	54	0	29	0..	47	0
mixed & dark..	12	0..	26	0	10	0..	24	0
Senegal	38	0..	45	0	28	0..	33	0
Sandrac............	90	0	105	0	94	0	115	0
Tragacanth, leaf	180	0	340	0	190	0	290	0
in sorts .	100	0	130	0	100	0	126	0
LAC DYE, per lb. D. T.	1	10½..	1	11	1	10½..	2	0
B Mirzapore........	1	6..	1	7	1	7..	1	9
Other good and fine..	1	0..	2	5	1	1..	2	3
Ord. & Native marks	0	2..	0	11	0	4 ..	1	0
OILS..........per tun	£.	s.	£.	s.	£.	s.	£.	s.
Seal, pale	39	10..	40	0	36	0..	0	0
yellow	33	0..	35	0	31	10..	32	10
brown	32	10..	0	0	30	0..	0	0
Sperm, body........	103	0	105	0	99	0..	99	10
headmatter	104	0..	0	0	101	0	.102	0
Cod................	36	10..	0	0	40	0..	0	0
Whale, Greenland ..	0	0..	0	0	37	0..	37	5
South Sea, pale	38	0..	0	0	35	10..	36	0
yellow	34	0..	0	0	32	10..	0	0
brown	33	0..	0	0	30	0..	30	10
E. I. Fish	30	0..	0	0	28	10..	29	0
Olive, Galipoli ..tun	60	0..	0	0	62	0..	0	0
Trieste	58	0..	0	0	60	0..	0	0
Levant	53	0..	53	10	56	0..	57	0
Mogadore	50	0..	0	0	56	0..	0	0
Spanish	58	0..	0	0	59	10..	60	0
Sicily	56	10..	0	0	60	10..	62	0
Florence, pr. ½-chst.	0	19..	1	0	0	18..	1	0
Cocoanut, Cochin, tun	47	10..	0	0	44	10..	45	10
Ceylon....	46	0..	0	0	42	10..	43	0
Sydney ..	44	0..	46	0	39	0..	43	0
Ground Nut and Gin.								
Bombay..........	38	15..	40	0	38	10..	0	0
Madras	40	0..	0	0	44	0..	45	0
Palm, fine	44	5..	45	10	46	0..	0	0
Palm Nut..........	38	0..	39	0	34	0..	0	0
Linseed	30	0..	0	0	28	5..	0	0
Rapeseed, Engl. pale.	41	6..	42	0	41	0..	0	0
brown	40	0..	0	0	40	0..	0	0
Foreign do.	40	0..	44	0	41	10..	42	0
brown	40	0..	41	0	40	10..	0	0
Lard	62	0..	0	0	62	0..	0	0
Tallow	32	10..	0	0	30	0..	0	0
Rosin	0	0..	0	0	7	5..	0	0
OILS, Essential;	s.	d.	s.	d.	s.	d.	s.	d.
Almond, essen. pr. lb.	30	0..	31	0	30	0..	31	0
expressed..	1	0..	0	0	1	0..	0	0
Aniseed	6	10..	0	0	8	1..	8	3
Bay........ per cwt.	122	6..	0	0	90	0	100	0
Bergamott....per lb.	6	6..	14	0	6	6..	11	0
Cajeputa, bond, pr.oz.	0	1½..	0	0	0	1..	0	1¼
Caraway .... per lb.	4	3..	6	0	4	3..	6	0
Cassia..............	9	0..	9	3	13	6..	0	0
Cinnamon(inh.) p.oz.	2	0..	3	10	3	0..	4	3
Cinnamon Leaf	0	1..	0	2½	0	2 ..	0	2½
Citronel............	0	4¾..	0	5¼	0	3¼..	0	3¾
Clove..............	0	4¼..	0	0	0	2½..	0	3¾
Croton	0	3 ..	0	4	0	4¼..	0	4½
Juniper......per lb.	1	10..	4	0	3	0..	5	0
Lavender	2	6..	5	0	2	6..	5	0
Lemon	5	0..	10	6	5	0..	11	0
Lemongrass..per oz.	0	4¾..	0	6	0	6 ..	0	6½

PRICE CURRENT—*continued.*

	1861.				1860.			
OILS, Essential,	s.	d.	s.	d.	s.	d.	s.	d.
Mace, ex	0	2	0	0	0	1¾	0	0
Neroli	6	0	9	0	6	0	10	0
Nutmeg	0	1¾	0	2	0	2½	0	3
Orange per lb.	7	0	8	0	10	2	11	0
Otto Roses per oz.	16	0	25	0	16	0	26	0
Peppermint per lb.								
American	7	6	15	0	8	0	14	0
English	35	0	42	0	24	6	30	0
Rhodium per oz.	3	9	6	0	3	9	6	0
Rosemary per lb.	1	10	3	0	2	0	3	0
Sassafras	3	0	3	6	3	6	3	9
Spearmint	5	0	12	6	5	0	12	6
Spike	1	3	1	6	1	3	1	6
Thyme	1	9	2	6	2	3	3	0
PITCH, British, pr. cwt.	6	0	6	3	6	0	6	3
Swedish	10	3	0	0	10	3	0	0
SALTPETRE, per cwt.								
Bengal, 6 p.c. or under	37	0	38	6	42	6	43	6
over 6 per cent.	34	0	36	6	37	0	42	0
Madras	32	0	34	6	36	0	40	0
Bombay	31	0	34	6	30	0	34	6
British-refined	37	6	38	6	41	0	42	0
Nitrate of Soda	12	9	13	6	14	0	16	0
SEED, Canary p. qr.	30	0	46	0	44	0	50	0
Caraway, English, p.c.	28	0	30	0	0	0	0	0
German, &c.	0	0	0	0	30	0	38	0
Clover, English, red	50	0	60	0	42	0	56	0
white	54	0	80	0	86	0	96	0
Germ. & French, red	42	0	56	0	40	0	50	0
white	56	0	80	0	80	0	96	0
Coriander	0	0	0	0	0	0	0	0
East India	13	0	16	0	11	6	12	6
Hemp	46	0	48	0	32	0	34	0
Linseed, English, p. qr.	0	0	0	0	0	0	0	0
Black Sea and Azof	51	6	0	0	49	0	50	0
Calcutta	50	6	52	0	49	0	50	0
Bombay	53	6	56	0	52	0	0	0
Egyptian	49	0	50	0	48	0	49	0
St. Ptrsbg. Morshnk	50	0	0	0	49	0	50	0
Archangel	46	0	47	0	37	0	38	0
Riga	42	0	44	0	0	0	0	0
Mustard, brown, p. bhl	5	6	12	0	10	0	13	0
white	5	6	12	0	11	0	14	0
Niger	48	0	0	0	41	6	42	0
Poppy, E.I. per qr.	57	0	58	0	52	0	53	0
Rape, English	0	0	0	0	0	0	0	0
Danube	62	0	0	0	53	0	0	0
Calcutta, fine	52	0	57	0	52	6	0	0
Bombay, Guzerat	62	0	67	0	58	0	60	0
Feroze. & Scinde	58	0	67	0	46	0	55	0
Teel, Sesame or Gngly.	63	0	67	0	58	0	65	0
Cotton per ton	7	10	0	0	6	0	6	10
Gnd. Nut Kernels, tn.	310	0	330	0	310	0	320	0
SOAP, Lond. yel. p. cwt.	21	0	38	0	21	0	38	0
mottled	34	0	38	0	36	0	38	6
curd	52	0	0	0	52	0	0	0
Castile	37	0	40	0	37	0	40	0
Marseilles	40	0	41	0	40	0	41	0
SOY, China (per gal.)	2	3	2	4	4	3	4	6
Japan	0	10	1	2	0	0	0	0
SPICES, duty free, except pepper,								
Cassia Lignea, p. cwt,	83	0	92	0	84	0	97	0
Vera	12	0	50	0	12	0	26	0
Buds	190	0	0	0	180	0	185	0
Cinnamon, per lb.								
Ceylon, 1st quality.	1	5	2	7	1	7	2	3
2nd ditto	1	2	1	10	1	1	1	9
3rd ditto	0	9	1	4	0	10	1	4
Tellicherry	0	10	1	0	0	9	0	11
Cloves, Penang	1	1½	1	4	1	2	1	5
Amboyna	0	4½	0	5½	0	4¼	0	5¾
Zanzibar	0	3¾	0	4⅝	0	3⅝	0	4
Ginger	£	s.	£	s.	£	s.	£	s.
Jamaica, fine pr. cwt.	7	0	9	10	8	0	10	0
ord. to good	2	5	6	0	4	0	7	10
African	33s.	0d.	33s.	6d.	35s.	0d.	37s.	0d.
Bengal	30	0	32	0	23	6	25	0
Malabar	36	0	0	0	33	0	34	0
Cochin	40	0	105	0	77	0	130	0
Mace, 1st qlty. lb.	1	6	1	10	1	10	2	8
2nd. & infr.	0	10	1	4	1	1	1	8
Nutmegs per lb.								
brown Penang, &c.	0	11	4	0	1	6	3	10
limed	0	10	2	6	1	4	2	6

	1861.				1860.			
SPICES,	s.	d.	s.	d.	s.	d.	s.	d.
Pepper (duty 6d. pr. lb.)								
Black, in bond								
Malabar	0	4¼	0	4¾	0	4½	0	5½
Aleppee	0	4¼	0	4½	0	4½	0	4⅞
Penang & Batavia	0	3⅜	0	3¾	0	3⅞	0	4⅛
Singapore	0	3¾	0	4	0	4	0	4⅛
White, Tellicherry.	0	10¼	1	5	0	9¾	1	0
Other sorts	0	5¾	0	6½	0	6	0	7¼
Cayenne	1	1	1	8	1	0	1	4
Pod, S. Leone pr. c.	28	0	32	0	30	0	36	0
Zanzibar	70	0	80	0	57	0	61	0
Long	32	0	34	0	35	0	38	0
Pimento, mid. to good	0	2¾	0	3⅛	0	3⅝	0	3⅞
ordinary	0	2½	0	2⅝	0	3½	0	0
SPONGE, Turk. f. pkd.	20	0	26	0	20	0	26	0
fair to good	9	0	18	0	7	0	18	0
ordinary	3	0	8	0	3	0	8	0
Bahama	0	3	1	3	0	3	1	0
TEA (duty 1s. 5d. per lb.) in bond.								
Congou, ordinary	0	7	0	8	1	2	1	4
good ordinary	0	10	0	11	1	4¼	1	5
but middling.	1	0	1	0	1	5	1	6
blackish leaf	1	0½	1	3	1	6¼	1	7
ditto strong	1	6	1	8	1	8	1	11
ditto to extra fine	1	9	2	5	2	0	2	6
Ning Yong and Oolong	1	6	2	0	1	7	2	4
Souchong, ordinary	0	11	1	0	1	5	1	6
fair to fine	1	3	1	10	1	7	2	4
finest	2	0	3	1	2	0	3	0
Flowry Pekoe, ordinary	1	2	1	4	0	0	0	0
fair to good	1	5½	2	0	2	0	2	6
fine to finest	2	6	5	0	3	0	4	6
Caper, scented, in bxs.	0	8	2	1	1	1½	2	6
Orange Pekoe, plain	0	9	1	2	1	0	1	6
scented	1	2	2	3	1	4	2	6
Twankay, ordy. Canton	0	0	0	0	0	0	0	0
common to good	0	9	1	2	0	10	0	11
fine to Hyson kind.	1	3	1	4	1	3	1	4
Hyson Skin, common	0	8	0	10	0	10	0	11
good to fine	0	11	1	1	1	0	1	1
Hyson, ordy. to comn.	1	4	1	7	1	7	1	8
fair to fine	1	8	2	6	2	0	2	6
finest	2	9	4	6	2	9	4	0
Young Hys. Boh. kind	0	9	0	11	0	7	0	9
good to fine	1	2	2	3	0	11	2	4
Imperial	1	0	2	2	1	0	2	2
Gunpowder	0	10	3	9	1	0	3	9
Assam	1	4	4	6	1	9	5	0
TURPENTINE,								
Rough per cwt.	10	6	11	0	9	3	9	6
Spirits, English	48	0	0	0	34	6	0	0
American, in casks	50	0	0	0	36	0	0	0
WAX, Bees, English	£8	5	£8	10	£8	5	£8	10
German	8	0	8	10	8	0	8	5
American	9	0	10	0	8	10	10	0
white fine	10	0	10	10	10	0	10	15
Jamaica	8	15	9	5	9	0	9	10
Gambia	9	0	0	0	9	0	9	10
Mogadore	6	10	8	0	6	0	7	10
East India	7	10	8	5	8	10	9	0
ditto, bleached	9	0	11	0	9	0	12	0
vegetable, Japan	2	16	3	4	3	5	3	10
WOOD, DYE, bar, pr. tn.	3	5	0	0	3	10	0	0
Brazil, first quality	70	0	75	0	80	0	85	0
second quality	55	0	60	0	60	0	0	0
logs	20	0	21	0	20	0	35	0
Braziletto	4	0	5	10	4	0	5	10
Camwood	20	0	24	0	26	0	29	0
Ebony, Green	7	0	8	10	9	10	10	0
Fustic, Cuba	8	10	9	0	8	15	9	5
Jamaica	5	15	5	10	5	10	5	15
Savanilla	5	10	5	15	5	5	5	10
Zante	7	0	9	0	9	10	11	0
Logwood, Campeachy	6	10	6	15	6	15	0	0
Honduras	5	10	6	0	5	5	0	0
St. Domingo	5	0	5	5	5	0	0	0
Jamaica	4	5	4	10	4	10	4	15
Nicaragua, lar. & sol.	9	10	0	0	12	0	13	10
small	8	10	0	0	6	0	8	0
Lima, first pile	11	0	11	10	13	0	14	0
second pile	9	0	10	0	12	10	13	0
Red Sanders	6	5	6	7 *6d*	5	10	6	0
Sapan, Bimas	6	10	8	0	7	10	9	0
Siam, &c.	6	15	9	10	6	15	9	0

THE NEW AMERICAN TARIFF.

Our last impression contained an interesting letter on the above topic. The analysis forwarded by our correspondent was withheld, for reasons given at the time. Circumstances are since altered; the "Morrill Bill" having actually come into operation. We therefore publish that analysis, which will, no doubt, be interesting to our readers, and will give shippers all the information required, in a condensed and tabulated form.

The Southern Tariff is also in our possession, but as it takes up so much space, and has not yet come into operation—the old States duties being adhered to—we abstain from publishing it at present.

All the predictions with regard to the smuggling that would ensue seem destined to even a more rapid realization than was anticipated. The "alarming discovery" is announced to have been made that certain importers are promptly availing themselves of the existing opportunity to introduce their merchandise into the New York Market *viâ* New Orleans and Mobile. It is added as a notorious fact, "that at least a million of dollars in foreign orders, which have gone forward, have been countermanded and ordered from New York to these two southern ports."

The disappointed Protectionists are, of course, endeavouring to bring odium upon those who thus fall into the temptation placed before them, and efforts are made to induce the public to believe that it is by ungrateful English merchants who have acquired fortunes in the United States that the clandestine operations are carried on. The Boston *Commercial Bulletin*, however, points out the puerility of this attempt, and warns its readers against expecting patriotism in affairs which are measured by commercial profits.

Arrangements are being perfected to start an efficient steam service between Liverpool and New Orleans and Charlestown, immediately that an arrangement of any kind shall have been come to between the belligerents.

We print below from the New Tariff law, such articles as belong to the trade of the Pharmacist, with the terms upon which they may be imported into the United States. The law came into operation on the 1st of April.

Specific Duties.—On white lead and oxide of zinc, dry or ground in oil, red lead, and litharge, one cent and a half per pound; on sugar of lead or acetate of lead and nitrate of lead, chromate and bichromate of potash, three cents per pound; on hydriodate and prussiate of potash, and chromic acid, and salts of iodine, and resublimated iodine, fifteen per centum ad valorem; on whiting, twenty-five cents per one hundred pounds; on Paris white, pipe clay, and ochres or ochrey earths, not otherwise provided for, when dry, thirty-five cents per one hundred pounds; when ground in oil, one dollar and thirty-five cents per one hundred pounds; on umber, fifty cents per one hundred pounds; on putty, one cent per pound; on linseed, flaxseed, hempseed, and rapeseed oil, twenty cents per gallon; on kerosene oil, and all other coal oils, ten cents per gallon; on alum, alum substitute, sulphate of alumina, and aluminous cake, fifty cents per one hundred pounds; on copperas, green vitriol, or sulphate of iron, twenty-five cents per one hundred pounds; on bleaching powders, fifteen cents per one hundred pounds; on refined camphor, six cents per pound; on refined borax, three cents per pound; on tallow, one cent per pound; on tallow candles, two cents per pound; on spermaceti or wax candles and tapers, and on candles and tapers of spermaceti and wax combined, eight cents per pound; on stearine candles and all other candles and tapers, four cents per pound; on spirits of turpentine, ten cents per gallon; on opium, one dollar per pound; on morphine, and its salts, one dollar per ounce; on liquorice paste or juice, three cents per pound; on honey, ten cents per gallon; on vinegar, six cents per gallon; on flaxseed or linseed, sixteen cents per bushel of fifty-two pounds; on hemp and rapeseed, ten cents per bushel of fifty-two pounds.

On cassia, four cents per pound; on cassia buds, eight cents per pound; on cloves, four cents per pound; on pepper, two cents per pound; on Cayenne pepper, three cents per pound; on ground Cayenne pepper, four cents per pound; on pimento, two cents per pound; on cinnamon, ten cents per pound; on mace and nutmegs, fifteen cents per pound; on prunes, two cents per pound.

On all plain, and mould, and press glassware, not cut, engraved, or painted, twenty-five per centum ad valorem; on all articles of glass, cut, engraved, painted, coloured, printed, stained, silvered, or gilded, thirty per centum ad valorem; on porcelain and Bohemian glass, and all manufactures of glass, or of which glass shall be a component material, not otherwise provided for, and all glass bottles or jars filled with sweetmeats, preserves, or other articles, thirty per centum ad valorem. On china and porcelain ware of all descriptions, thirty per centum ad valorem; on all brown earthen and common stone ware, twenty per centum ad valorem; on all other earthen, stone, or crockery ware, printed, white, glazed, edged, painted, dipped, or cream coloured, composed of earthy or mineral substances, twenty-five per centum ad valorem.

Ten per Centum.—A duty of ten per centum on the importation of the articles hereinafter mentioned, and embraced in this section, that is to say: Acids, nitric, yellow and white, oxalic, and all other acids of every description, used for medicinal purposes, or in the fine arts, not otherwise provided for; aloes; amber; ammonia, sal ammoniac, muriate and carbonate of ammonia; anise seed; arrowroot; assafœtida; barks of all kinds not otherwise provided for; beeswax; black lead, or plumbago; borate of lime; Brazil paste; cantharides; castor beans or seeds; cocculus indicus; Dutch and bronze metal in leaf; ergot; gamboge; ginger, ground, preserved, or pickled; gold-beaters' skin; gum copal, gum substitute, or burnt starch; hops; iodine, crude; ipecacuanha; iron liquor; jalap; juniper berries; lemon and lime juice; manganese; manna; mineral kermes; moss, Iceland; oatmeal; oils, palm, seal, and cocoanut; olive oil in casks, other than salad oil; orange and lemon peel; pearl or hulled barley; Peruvian bark; plaster of Paris, when ground; Prussian blue; quicksilver; rhubarb; saffron and saffron cake; saltpetre, or nitrate of soda, or potash, when refined or partially refined; salts of tin; sarsaparilla; sepia; sponges; squills; tapioca; manufactured teeth; tinfoil; vanilla beans; vegetables not otherwise provided for; verdigris.

Twenty per Centum.—A duty of twenty per centum on the importation of the articles hereinafter mentioned and embraced in this section, that is to say: Antimony, tartrate of; acids, citric and tartaric; blue or Roman vitriol, or sulphate of copper; brimstone in rolls; bronze powder; Burgundy pitch; calomel; castor oil; castoreum; chicory root; chocolate; chromate of lead; corks; cowhage down; cubebs; dried pulp; ether; fig blue; fish glue, or isinglass; flowers of sulphur; Frankfort black; fulminates, or fulminating powders; glue; gold and silver leaf; magnesia; mercurial preparations, not otherwise provided for; medicinal roots and leaves, and all other drugs and medicines in a crude state, not otherwise provided for; mustard, ground or manufactured; oils, neatsfoot and other animal oils, spermaceti, whale, and other fish oils, the produce of foreign fisheries; oils volatile, essential or expressed, not otherwise provided for; paints, dry or ground in oil, not otherwise provided for; pitch; plaster of Paris calcined; red precipitate; Roman cement; rosin; sal soda, hyposulphite of soda, and all carbonates of soda, by whatever name designated, not otherwise provided for; salts, Epsom, Glauber, Rochelle, and all other salts, and preparations of salts, not otherwise provided for; spices of all kinds, not otherwise provided for; spirits of turpentine; starch; strychnine; sulphate of barytes, crude or refined; sulphate of magnesia; sulphate of quinine; tar; varnish of all kinds; Vandyke brown; Venetian red; vermilion; white vitriol, or sulphate of zinc.

Thirty per Centum.—A duty of thirty per centum on the articles hereinafter mentioned and embraced in this section, that is to say: Balsams, cosmetics, essences, extracts, pastes, perfumes, and tinctures, used either for the toilet or for medicinal purposes; braces, suspenders, webbing, or other fabrics, composed wholly or in part of India rubber, not otherwise provided for; brooms and brushes of all kinds; benzoates; carbonate of magnesia; court-plaster; hair-pencils; ink and ink powder; lead pencils; maccaroni, vermicelli, gelatine, jellies, and all similar preparations; manufactures of the bark of the cork-tree, except corks; mineral waters; olive salad oil; paper boxes, and all other fancy boxes; paper envelopes; red chalk pencils; soap, Castile, perfumed, Windsor, and all kinds; twines and pack-thread, of whatever material composed, not otherwise provided for.

Free.—Exempt from duty; Acids, acetic, acetous, benzoic, boracic, muriatic, sulphuric, and pyroligneous, and all acids of every description used for chemical and manufacturing purposes, not otherwise provided for; ambergris; Annatto, Roncou, or Orleans; animal carbon; antimony, crude, or regulus of; argols, or crude tartar; arsenic; articles in a crude state used in dyeing or tanning, not otherwise provided for; asphaltum; bark, Peruvian, or bark quilla; Barilla, and soda ash; berries, nuts, flowers, plants, and vegetables, used exclusively in dyeing or composing dyes: but no article shall be classed as such that has undergone any manufacture; bismuth; bitter apples; borax, crude, or tincal; buchu leaves; Brazil wood; brazilletto, and all other dye-woods, in sticks; brimstone, crude, in bulk; cadmium; calamine; camphor, crude; chalk, French chalk, and red chalk; cochineal; cobalt; cocoa, cocoa shells, cocoa leaves, and cocoa nuts; cork-tree bark, unmanufactured; cream of tartar; cud-bear, vegetable and orchil; divi-divi; dragon's blood; emery in lump or pulverized; extract of indigo; extract of madder; extracts and decoctions of logwood and other dye-woods, not otherwise provided for; fuller's earth; ginger root; gums, Arabic, Barbary, East India, Jedda, Senegal, Tragacanth, Benjamin, or Benzoin, myrrh, and all other gums and resins in a crude state, not otherwise provided for; gutta percha unmanufactured; India rubber, in bottles, slabs, or sheets, unmanufactured, milk of; indigo; iridium; iris, or orris root; kelp; lac-dye, lac spirits; lac-sulphur; leeches; liquorice root; madder, ground or prepared, and madder root; mineral blue; munjeet; India madder; natron; nickel; nutgalls; nux vomica; oil, spermaceti, whale and other fish, of American fisheries, and all other articles the product of such fisheries; orpiment, or sulphuret of arsenic; plaster of Paris unground; platina; pumice and pumice stones; quassia-wood; rottenstone; safflower; saltpetre, or nitrate of soda, or potash, when crude; sandal-wood; seedlac; smalts; shellac; specimens of natural history, mineralogy, and botany; sumac; terra japonica, catechu, or cutch; tin, in pigs, bars, or blocks; turmeric; wood.

On the importation of all raw or unmanufactured articles, not herein enumerated or provided, a duty of ten per centum ad valorem; and on all articles manufactured in whole or in part, not herein enumerated or provided for, a duty of twenty per centum ad valorem.

PATENTS

Selected and arranged by WEATHERDON & Co., Patent Agents, 77, Chancery Lane.

LETTERS PATENT.

DRUGS, CHEMICALS, ETC.

36 Williams, W. M., Handsworth, Stafford, an improvement or improvements in treating coal and other bituminous materials and peat, for the purpose of obtaining solid and liquid hydro-carbons therefrom.

INDIA RUBBER AND GUTTA PERCHA.

2152 Burke, W. H., the elder, and Burke, W. H., the younger, Brompton, Middlesex, a method of preparing fabrics composed of or containing caoutchouc, to enable them to resist the action of colours and varnishes containing oil.

2439 Clark, W., Chancery-lane, improvements in cleaning or separating gutta percha from extraneous matters, and in apparatus for the same.

MISCELLANEOUS.

2145 Vergnes, M., New York, an improvement in the construction of magnetic or electric helices.

2168 Wildsmith, J. H. S., Wolverhampton, a new or improved lubricating material or compound, which said material or compound may also be employed in the manufacture of soap.

2193 Clapham, R. C., Walker, Northumberland, improvements in the manufacture of bleaching powder, and apparatus employed therein.

2220 Launay, C. T., and De Vernez, A. M. A. D., Paris, improvements in treating coal naphtha, and in apparatus employed therein.

2243 Horsey, J., Belvedere-road, Surrey, improvements in india rubber teats.

2249 Barnwell, S., and Rollason, A., Coventry, improvements in combining and mixing certain solutions of pyroxylene with animal, mineral, and vegetable substances, by which its quality is altered in such manner as to produce hard, resistent, adhesive, plastic, or resilient compounds and articles, unalterable in their nature and varied in colour, which said compounds, in a state of solution, may also be advantageously employed as paints or varnish.

2272 Reece, R., Llandilo, improvements in treating lignite and certain bituminous mineral substances, so as to obtain products therefrom.

2277 Cole, R. J., Bayswater, improvements in the manufacture of brushes.

2296 Richardson, T., Newcastle-upon-Tyne, and Prentice, M., Stowmarket, improvements in treating phosphoric matters, and in obtaining products therefrom.

2364 Robinson, T., St. Helens, Lancashire, improvements in machinery for packing soda, ash, and other matters or substances, in casks and other vessels.

2401 Cowper, C., Chancery-lane, improvements in the manufacture or extraction and application of colouring matters from the products of the distillation of coal tar.

2730 Wilson, G., York, an improved construction of stoppered bottles.

3010 Mushet, R., Coleford, Gloucester, an improvement or improvements in the manufacture of an alloy or alloys of titanium and iron.

3030 Mushet, R., Coleford, Gloucester, an improvement or improvements in the manufacture of an alloy or alloys of titanium and iron.

3039 Vervey, A., Croydon, improvements in the proportions of ingredients and mode of manufacture of a chemical compound for softening water.

3166 Johnson, J. H., Lincoln's-inn-fields, improvements in instruments for assisting the sense of hearing.

PROVISIONAL PATENTS.

DRUGS, CHEMICALS, ETC.

376 Cobley, T., Germany, improvements in the manufacture of white lead, zinc white, and glazing or potter's lead.

383 Prenslan, M. A., Liverpool, improved preparations for the cure and prevention of toothache, and the preservation of teeth.

408 Clark, W., Chancery-lane, improvements in the preparation of alkaline and earthy cyanides.

537 Stevens, C., Charing-cross, an ointment for the cure of sores.

MISCELLANEOUS.

96 Boquet, M. V., Paris, an improved mode of stoppering or closing canisters, bottles, or other vessels.

439 Lang, B., Snow-hill, London, improvements in apparatus for feeding infants and invalids.

488 Regnault, C. C., Cavendish-square, improvements in the manufacture of oils, and in treating oils and fats, for purposes of purifying, decolourising, clarifying, and disinfecting them.

491 Tiernan, R., Liverpool, an improved apparatus for drawing liquid substances from vessels containing the same.

505 Ransome, F., Ipswich, improvements in the manufacture of artificial stone and cement.

567 Johnson, J. H., Lincoln's-inn-fields, improvements in apparatus for administering medicated or voltaic baths.